SAMSUNG

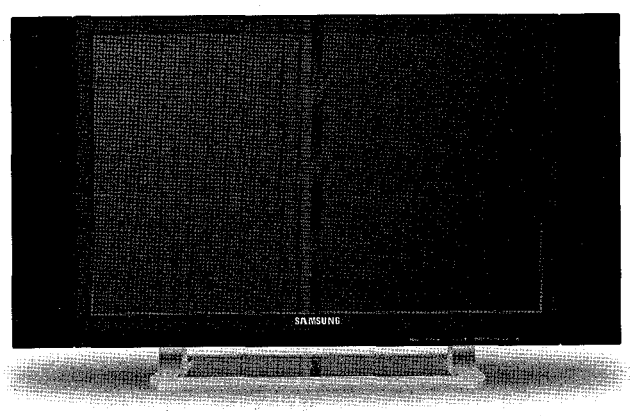
LCD-Monitor

Chassis **PO24FS**

Model **242MP**

SERVICE Manual

TFT-LCD MONITOR



Fashion Feature

- Worldwide TV Monitor Model
  (Input to NT,PAL and SECAM areas supported).
- MFM (Multi-function Monitor)
  : A variety of external sources supported as well as PC
  PC, DVI, DVD, DTV Set-top Box.
- 16:10 display.
- Menu Opacity: Can control the opacity of PIP and OSD.
- CM LVDS (COLOR ENHANCER) Built-in Chip, Improved
  Picture Quality (MAGICCOLOR PRO).

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242MP Service Manual

First edition March 2005.

Printed in Korea.

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1 Precautions

Follow these safety, servicing and ESD precautions to prevent damage and to protect against potential hazards such as electrical shock.

1-1 Safety Precautions

1-1-1 Warnings

1. For continued safety, do not attempt to modify the circuit board.
2. Disconnect the AC power and DC power jack before servicing.

1-1-2 Servicing the LCD Monitor

1. When servicing the LCD Monitor, disconnect the AC line cord from the AC outlet.
2. It is essential that service technicians have an accurate voltage meter available at all times. Check the calibration of this meter periodically.

1-1-3 Fire and Shock Hazard

Before returning the monitor to the user, perform the following safety checks:

1. Inspect each lead dress to make certain that the leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the monitor.
2. Inspect all protective devices such as nonmetallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacitor networks, mechanical insulators, etc.
3. Leakage Current Hot Check (Figure 1-1):

   WARNING: Do not use an isolation transformer during this test.

   Use a leakage current tester or a metering system that complies with American National Standards Institute (*ANSI C101.1, Leakage Current for Appliances*), and Underwriters Laboratories (*UL Publication UL1410, 59.7*).

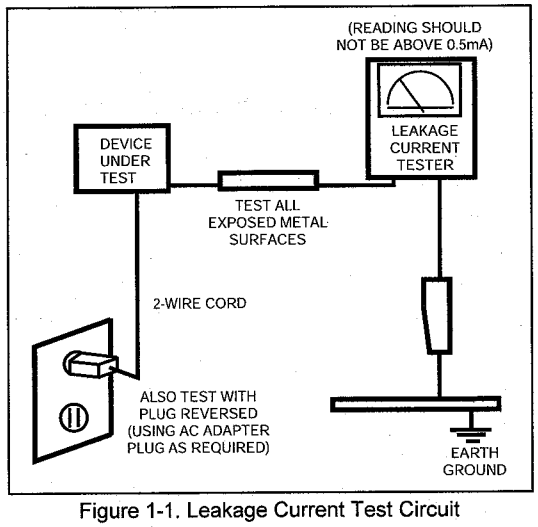

(READING SHOULD NOT BE ABOVE 0.5mA)
LEAKAGE CURRENT TESTER
DEVICE UNDER TEST
TEST ALL EXPOSED METAL SURFACES
2-WIRE CORD
ALSO TEST WITH PLUG REVERSED (USING AC ADAPTER PLUG AS REQUIRED)
EARTH GROUND

Figure 1-1. Leakage Current Test Circuit

4. With the unit completely reassembled, plug the AC line cord directly into a 120V AC outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known earth ground (metal water pipe, conduit, etc.) and all exposed metal parts, including: metal cabinets, screwheads and control shafts. The current measured should not exceed 0.5 milliamp. Reverse the power-plug prongs in the AC outlet and repeat the test.

1-1-4 Product Safety Notices

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection. The protection they give may not be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by ⚠ on schematics and parts lists. A substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire and/or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

1-2 Servicing Precautions

WARNING: **An electrolytic capacitor installed with the wrong polarity might explode.**

Caution: **Before servicing units covered by this service manual, read and follow the Safety Precautions section of this manual.**

Note: **If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions.**

1-2-1 General Servicing Precautions

1. Always unplug the unit's AC power cord from the AC power source and disconnect the DC Power Jack before attempting to:
   (a) remove or reinstall any component or assembly, (b) disconnect PCB plugs or connectors, (c) connect a test component in parallel with an electrolytic capacitor.
2. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
3. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the area around the serviced part has not been damaged.
4. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels, input terminals and earphone jacks). and accessible conductive parts (examples: metal panels, input terminals and earphone jacks).
5. Insulation Checking Procedure: Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500 V) to the blades of the AC plug.

   The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.
6. Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.

1-3 Electrostatically Sensitive Device (ESD) Precautio

Some semiconductor (solid state) devices can be easily damaged by static electricity. Such components are commonly called Electrostatically Sensitive Devices (ESD). Examples of typical ESD are integrated circuits and some field-effect transistors. The following techniques will reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. To avoid a shock hazard, be sure to remove the wrist strap before applying power to the monitor.
2. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of an electrostatic charge.
3. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESDs.
4. Use only a grounded-tip soldering iron to solder or desolder ESDs.
5. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESDs.
6. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
7. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.

   Caution: Be sure no power is applied to the chassis or circuit and observe all other safety precautions.
8. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting your foot from a carpeted floor can generate enough static electricity to damage an ESD.

2 Product specifications

2-1 Product Main Specification

-Worldwide TV Monitor Model (Input to NT,PAL and SECAM areas supported).

-MFM (Multi-function Monitor): A variety of external sources supported as well as PC PC, DVI, DVD, DTV Set-top Box.

-16:10 display.

-Menu Opacity: Can control the opacity of PIP and OSD.

-CM LVDS (COLOR ENHANCER) Built-in Chip, Improved Picture Quality(MAGICCOLOR PRO).

-Adopts the Dolby Virtual and BBE features to enhance the sound quality.

-MFM TV MONITOR (RF, FM, AV, S-VIDEO, COMPONENT, SCART, PC, DVI).

-242MP: Uses the AMLCD 6300K Panel (PVA PANEL).

-Video Input: RF, CVBS (Composite Video Baseband Signal),S-VIDEO,COMPONENT, SCART(RGB,CVBS),PC ANALOG and DVI.

-Audio Input:PC(ANALOG,DVI)STEREOInput,RF,FM RADIO,VIDEO(CVBS,S-VIDEO),COMPONENT,SCART.

-External 5W Speaker Output.

-Sleep Mode.

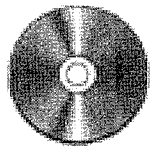
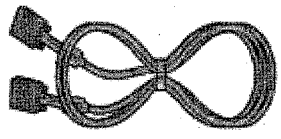
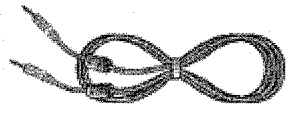
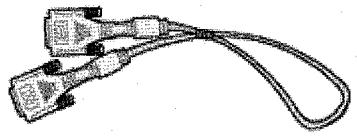
-Wall & Ceiling Mounting (Optional VESA Wall Mount Kit)

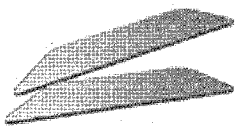
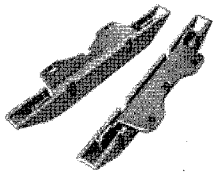
2-2 Specification

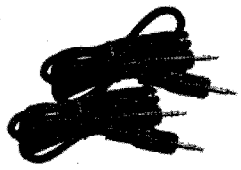
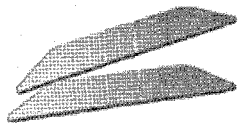
Item	Description
LCD Panel	TFT-LCD panel, RGB vertical stripe, normally black, 24-Inch viewable, 0.27 mm pixel pitch
Scanning Frequency	Horizontal : 31 kHz ~ 81 kHz (Automatic) Vertical : 56 Hz ~ 75 Hz (Automatic)
Display Colors	16.7 Million colors
Maximum Resolution	Horizontal : 1920 Pixels Vertical : 1200 Pixels
Input Video Signal	RGB Analog, DVI(Digital Visual Interface) Compliant Digital RGB
Input Sync Signal	Type : separate H/V sync, Composite, automatic synchronization without external switch Level : TTL level (V high≧2.0V, V low ≦0.8V)
Maximum Pixel Clock rate	165 MHz
Active Display Horizontal/Vertical	518.4(H)mm / 324(V)mm(24 INCH)
AC power voltage & Frequency	AC 90 ~ 264 Volts, 60 / 50 Hz +/- 3 Hz
Power Consumption(DPMS)	150 W (less than 2W)
Dimensions (W x H x D) Set Package	 21.98 x 14.98 x 3.54 Inches (558.4 x 380.7 x 90.0 mm) (Without stand) 21.98 x 61.81 x 6.96 Inches (558.4 x 427.2 x 177.0 mm) (With Stand) 26.02 x 20.51x 11.61 Inches (661.0 x 521.0 x 295.0 mm)
Weight (Set/Package)	8kg (17.63lbs)(Without stand), 9kg(19.84lbs)(With stand) / 12kg (26.45lbs)(Pakage)
Environmental Considerations	Operating Temperature : 50 °F ~ 104 °F (10 °C ~ 40 °C) Operating Humidity : 10 % ~ 80 % Storage Temperature : -4 °F ~ 113 °F (-20 °C ~ 45 °C) Storage Humidity : 5 % ~ 95 %
TV System	Tuning: Frequency Synthesize Color: NTSC-M ,PAL-M/N,PAL/SECAM-L/L',B/G,D/K,I Sound: NTSC system: BTSC(Broadcast Television System Committee), A2-Korea, EIAJ PAL system: B/G, I , D/K, L/L'
Antenna Input	75Ω, Coaxial Cable
Sound Characteristic	1) MAX Internal speaker Out : 5W(channel) x 2 (output level: 4W ~ 6W) 2) Total Harmonic Distortion : 10% MAX 3) AUDIO S/N : 40dB MIN 4) BASS Control Range : -12dB ~ +12dB , TREBLE Control Range : -12dB ~ +12dB 5) Surround mode support 6) Headphone Out : - RF : 5mW max (400m Vrms) - A/V : 10mW max (580 Vrms), Max Input sound : -9dBm 7) Output Frequency - RF : 50Hz ~ 12KHz - A/V : 50Hz ~ 12KHz 8) Max Input Level : 2V 9) standard Audio Input Level :500mVrms 10) CROSSTALK - A/V Input : 60dB min - RF input : 50dB min 11) Input Impedance : 10kΩ

Item	Description
DISPLAY IMAGE PERFOMANCE	1) MagicBright support. - Text Mode : 160 cd/m2 < 90 ~160 > - Internet Mode : 220 cd/m2 < 190 ~ 250 > - Entertain Mode : 400 cd/m2 < 360 ~ 450 > 2) MagicColor Pro 2-1 MagicColor (Factory mode: Off) - Off: Not adaptive full color saturation enhancement - Intelligent: Adaptive full color saturation enhancement except skin color - Full: Adaptive full color saturation enhancement - Demo: Display difference between adaptive full color and non-adaptive full color saturation enhancement 2-2 Color Tone (Factory mode: Noraml) - Warm2(4000K) , Warm1(5000K) , Normal(6500K) , Cool1(7000K) , Cool2(8000K), Cool3(9300K), Cool4(10000K) - Color tone range: Each color tone ±700K 2-3 Gamma (Factory mode: +0.2) - -0.3 , -0.2 , -0.1 , +0 , +0.1 , +0.2 , +0.3 , +0.4 , +0.5 , +0.6 2-4 6-color (Each color setting factory mode: 50 , Change range: 0~100) - Saturation(S): Change range from 0 to 1 at RGBCMY HSV color coordinates Change OSD step range 0~100 ("S(0)" → "0" step: white color , "S(1)" → "100" step: dark color) - Hue(H): Change range from -60° to + 60° at RGBCMY HSV color coordinates Change OSD step range 0~100 (each same step intervals: 1.2°) - Reset 2-5 Color Weakness (Factory mode: Off) - Off: Not Color Weakness correction function state - Custom1: Color Weakness correction function state 1 Each color(R,G,B) 10step(OSD Step: 0~9) control - Custom2: Color Weakness correction function state 2 Each color(R,G,B) 10step(OSD Step: 0~9) control

2-3 Option Specification

Item	Item Name	Code.No	Remark
	Quick Setup Guide	BH68-00376M	
	Warranty Card (Not available in all locations)	BH68-00261F	
	User's Guide, Monitor Driver, Natural Color software	BN59-00391D	
	D-SUB CABLE	BN39-00115A	
	POWER CORD	3903-000085	
	AUDIO CABLE	BN39-00061B	
	RADIO ANTENNA	AA39-00365A	
	DVI CABLE	BN39-00073A	

Item	Item Name	Code.No	Remark
	Remote Control	BN59-00434A	
	Batteries (AAA×2)	4301-000121	
	Connector	3705-001191	
	Side Cover		
	SPEAKER ASSY	BN96-01816A	
	COVER ASSY SPEAKER	BN63-01713A	
	Speaker-Stand		
	Speaker Brackets (Use only for the mounting type installation.)		

Item	Item Name	Code.No	Remark
	Speaker-Audio cable		
	Screws (Black 4EA, Silver 4EA)		
	Speaker-Side cover		

3 Alignments and Adjustments

This section describes to adjust LCD monitor after replacing EEPROM, Main PBA or Panel.

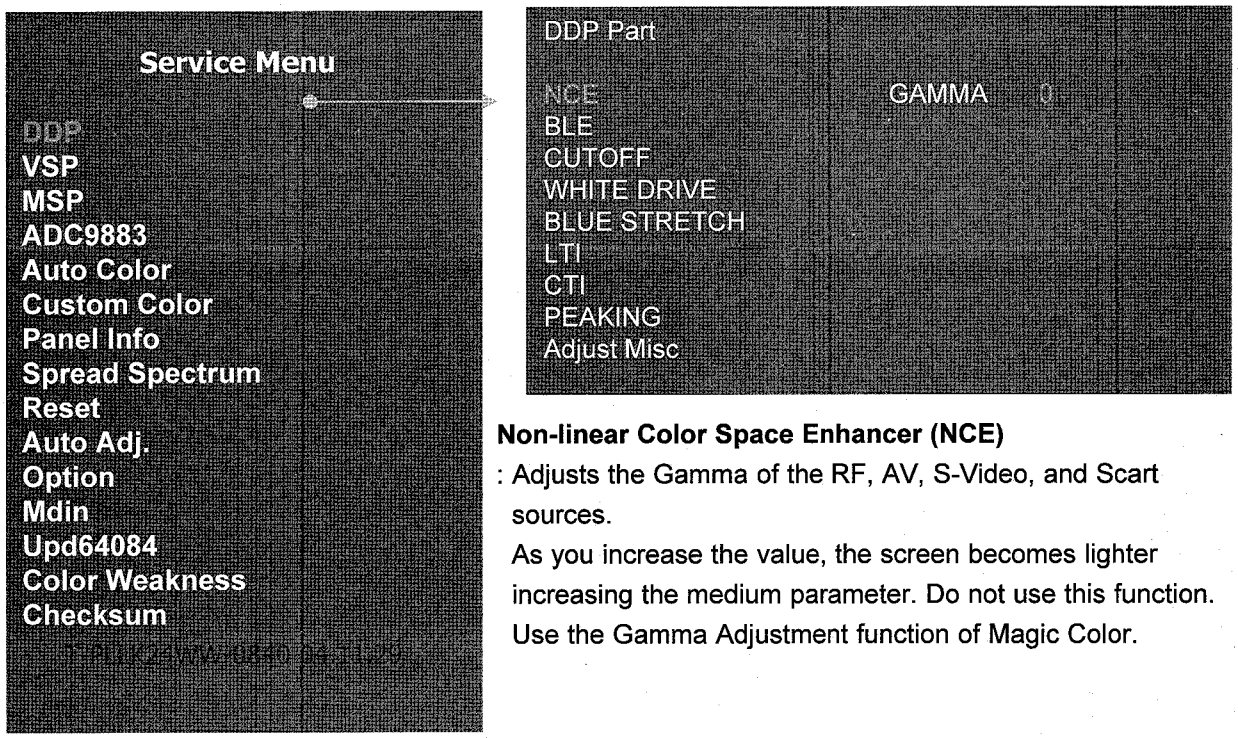
3-1 Factory Mode Adjustments

- PAL : Power off → INFO → MENU → MUTE → Power ON

- NTSC : Power off → MUTE → 1 → 8 → 2 → Power ON

3-2 Factory DATA

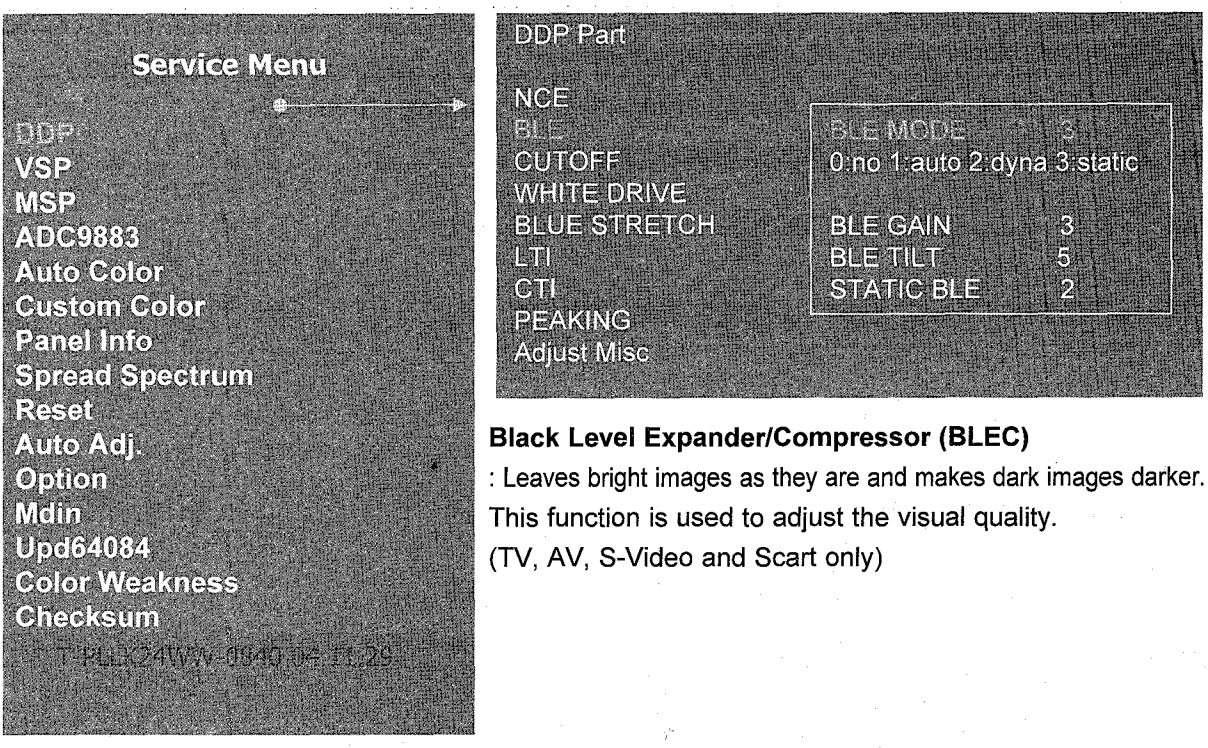
• DDP(Display and Deflection Processor) part



Non-linear Color Space Enhancer (NCE)

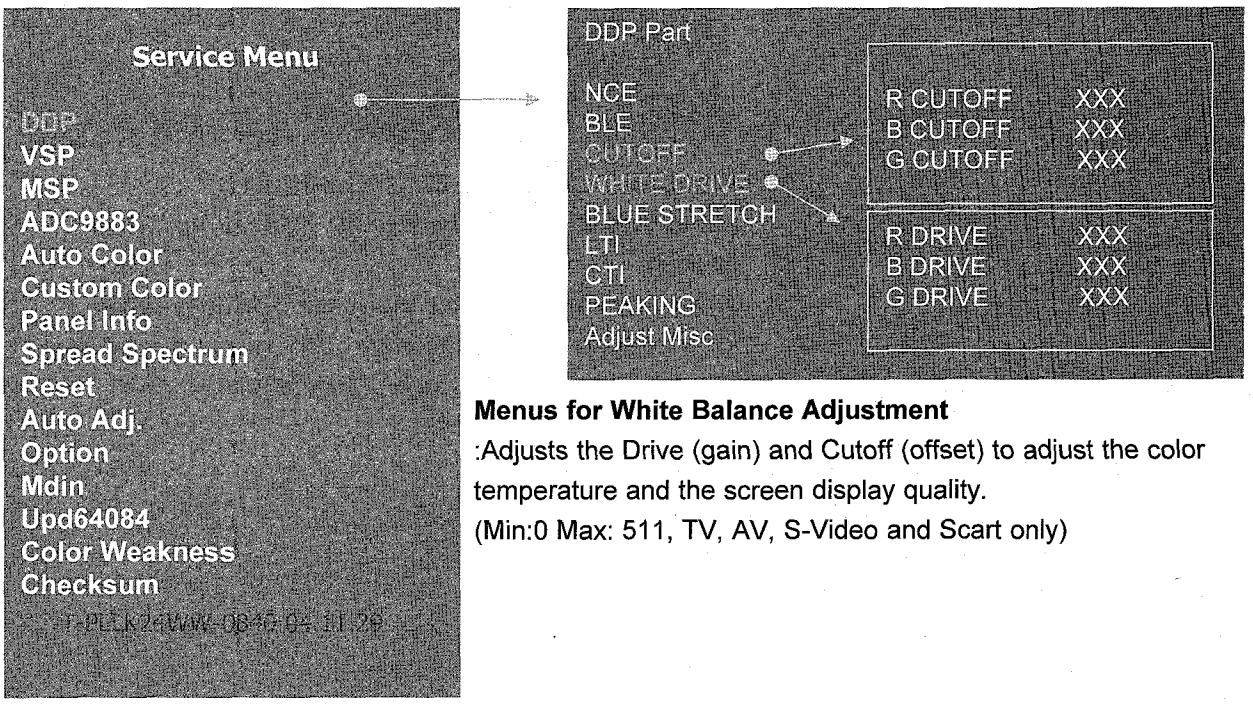
: Adjusts the Gamma of the RF, AV, S-Video, and Scart sources.

As you increase the value, the screen becomes lighter increasing the medium parameter. Do not use this function. Use the Gamma Adjustment function of Magic Color.



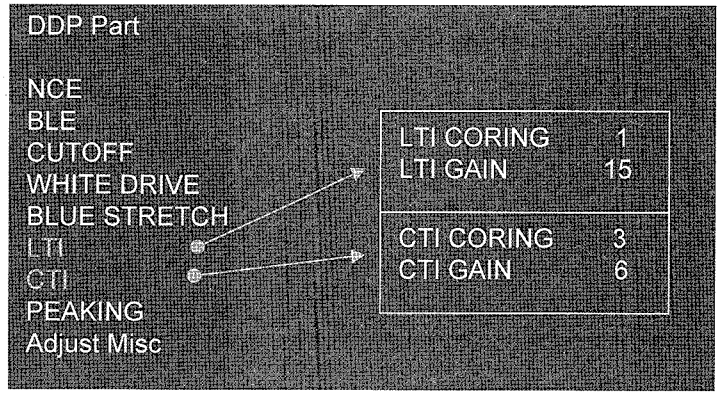
Black Level Expander/Compressor (BLEC)

: Leaves bright images as they are and makes dark images darker. This function is used to adjust the visual quality.
(TV, AV, S-Video and Scart only)

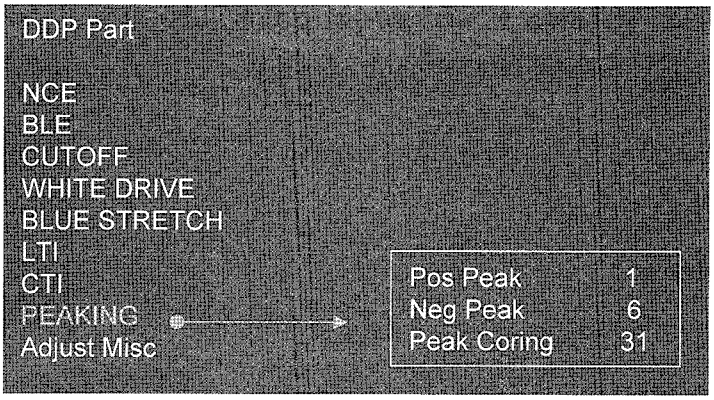


Menus for White Balance Adjustment

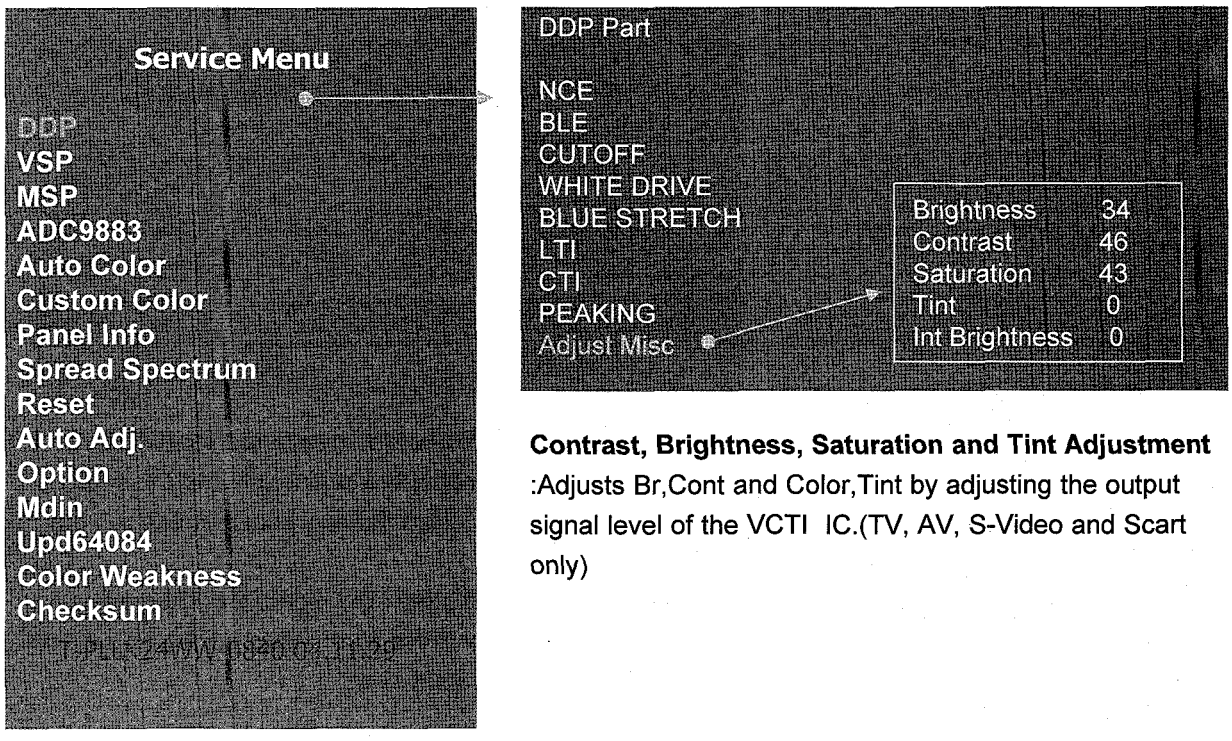
:Adjusts the Drive (gain) and Cutoff (offset) to adjust the color temperature and the screen display quality.
(Min:0 Max: 511, TV, AV, S-Video and Scart only)



Luma/Chrominance Transient Improvement (LTI/CTI)
:Corrects the suite signal of the luminance and the color difference signal to enhance the sharpness and to reduce peaking.
The higher the peaking value, the higher the sharpness. However, a higher sharpness also shows noise more clearly.
(TV, AV, S-Video and Scart only)

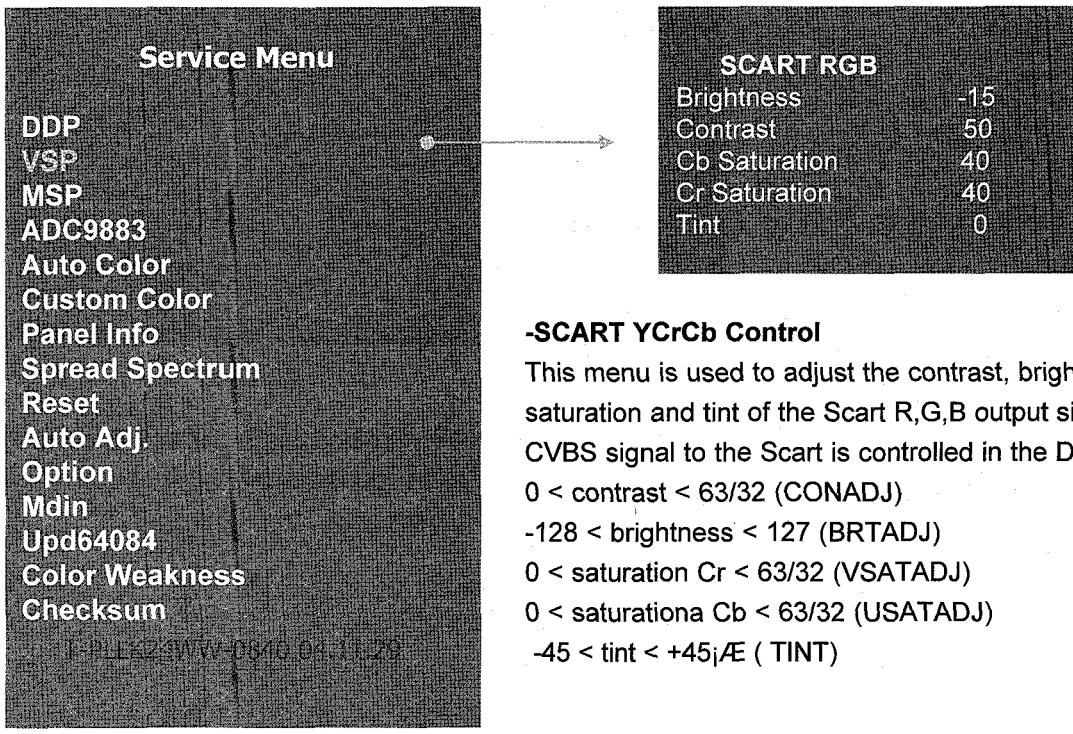


-Peaking
:Adjusts the Peaking strength and weakness by adjusting the Overshoot and Undershoot adjustment.
(TV, AV, S-Video and Scart only)



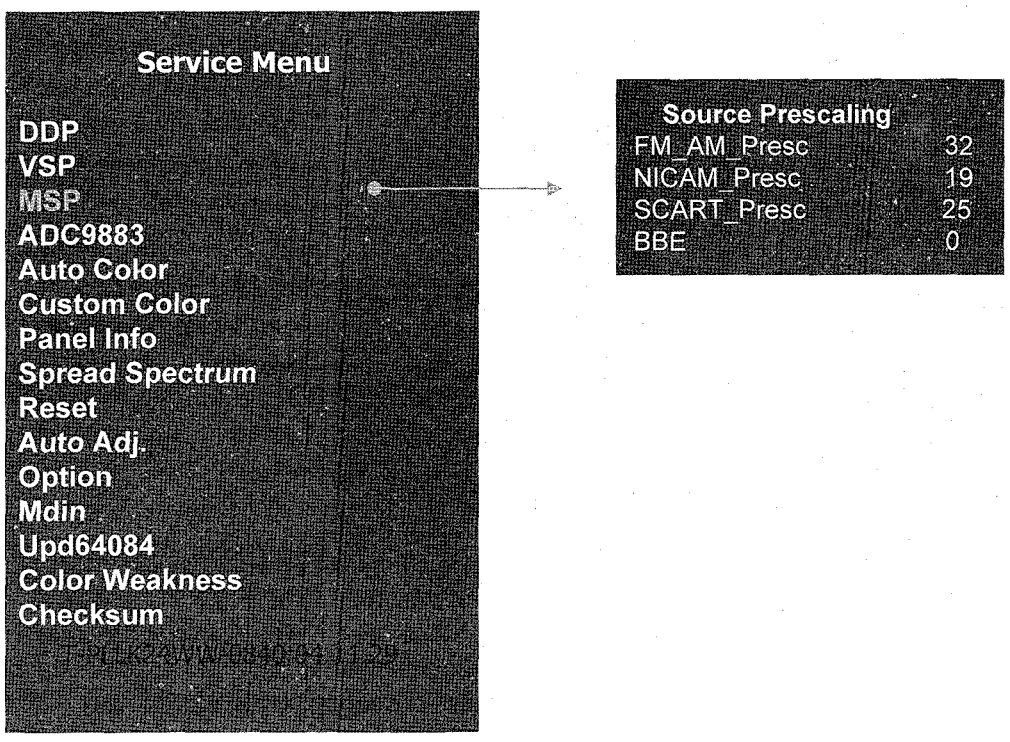
Contrast, Brightness, Saturation and Tint Adjustment
:Adjusts Br,Cont and Color,Tint by adjusting the output signal level of the VCTI IC.(TV, AV, S-Video and Scart only)

-VSP(Video Processor) part

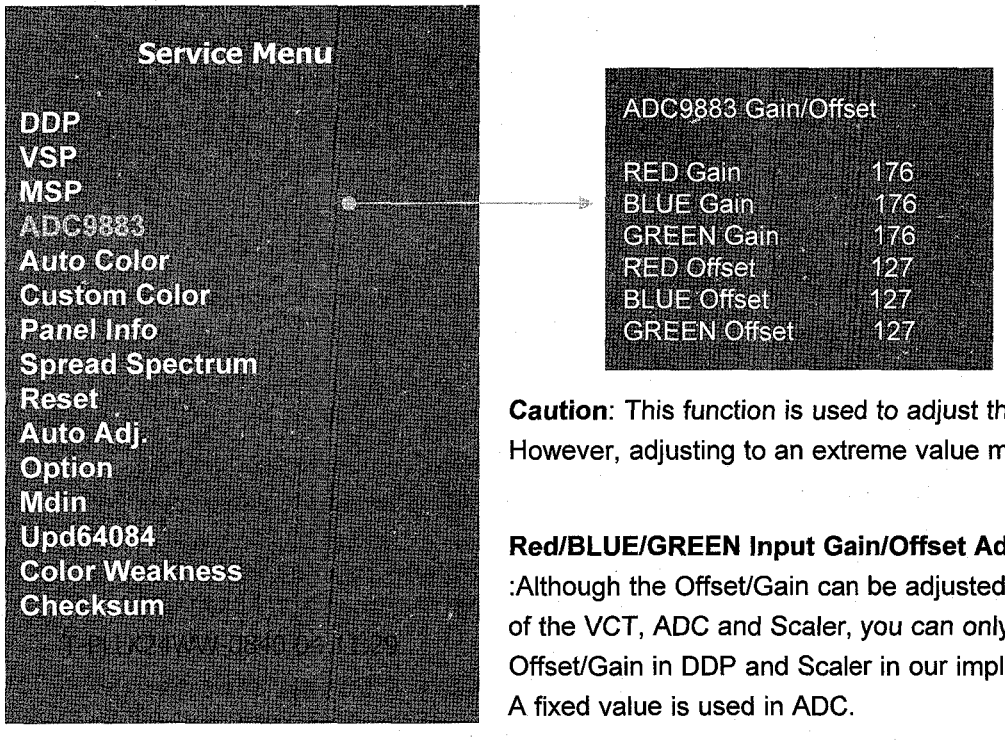


-SCART YCrCb Control
This menu is used to adjust the contrast, brightness, color saturation and tint of the Scart R,G,B output signal. The CVBS signal to the Scart is controlled in the DDP menu.
0 < contrast < 63/32 (CONADJ)
-128 < brightness < 127 (BRTADJ)
0 < saturation Cr < 63/32 (VSATADJ)
0 < saturationa Cb < 63/32 (USATADJ)
-45 < tint < +45¡Æ (TINT)

-MSP(Multistandard Sound Processor) part

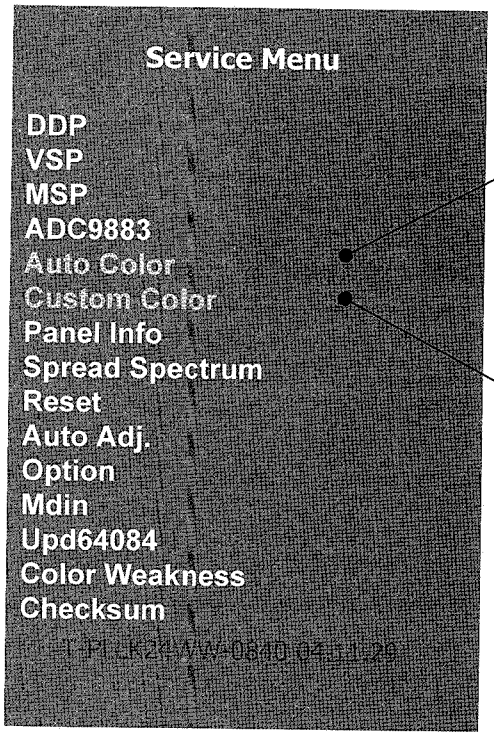


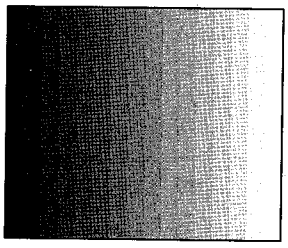
-ADC9883 part



Caution: This function is used to adjust the sense of color. However, adjusting to an extreme value may saturate a color.

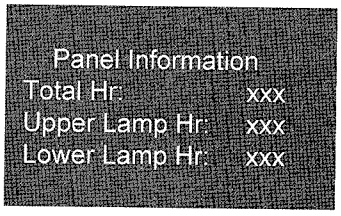
Red/BLUE/GREEN Input Gain/Offset Adjustment
:Although the Offset/Gain can be adjusted in the DDP block of the VCT, ADC and Scaler, you can only adjust the Offset/Gain in DDP and Scaler in our implementation.
A fixed value is used in ADC.



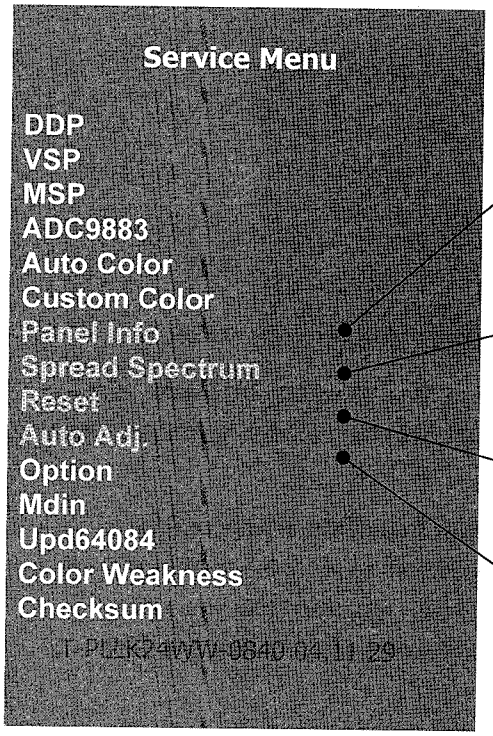


Caution: PC analog Only
(1920*1200@60Hz 16gray pattern)
The color adjustment will only work properly with a particular pattern in a particular mode. Using the color adjustment in other cases may distort the color.

The Color Adjustment function provided by Gm1601.
It is used to adjust the color tone of the PC and DVI.
Although the color tone adjustment functions for other sources are implemented using the VCT, the color tone adjustment functions for components and DVI are implemented using the Scaler.
However, the color tone is adjustable using the CM LVDS at the rear of the Scaler by the user. Do not adjust this custom color and use the default setting.



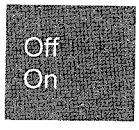
Reset the time after a panel or lamp replacement.
Resetting the time : Press and hold down the Menu button on the front panel of the monitor for 5 seconds.



The EMI Radiation adjustment menu. Never adjust the default setting.

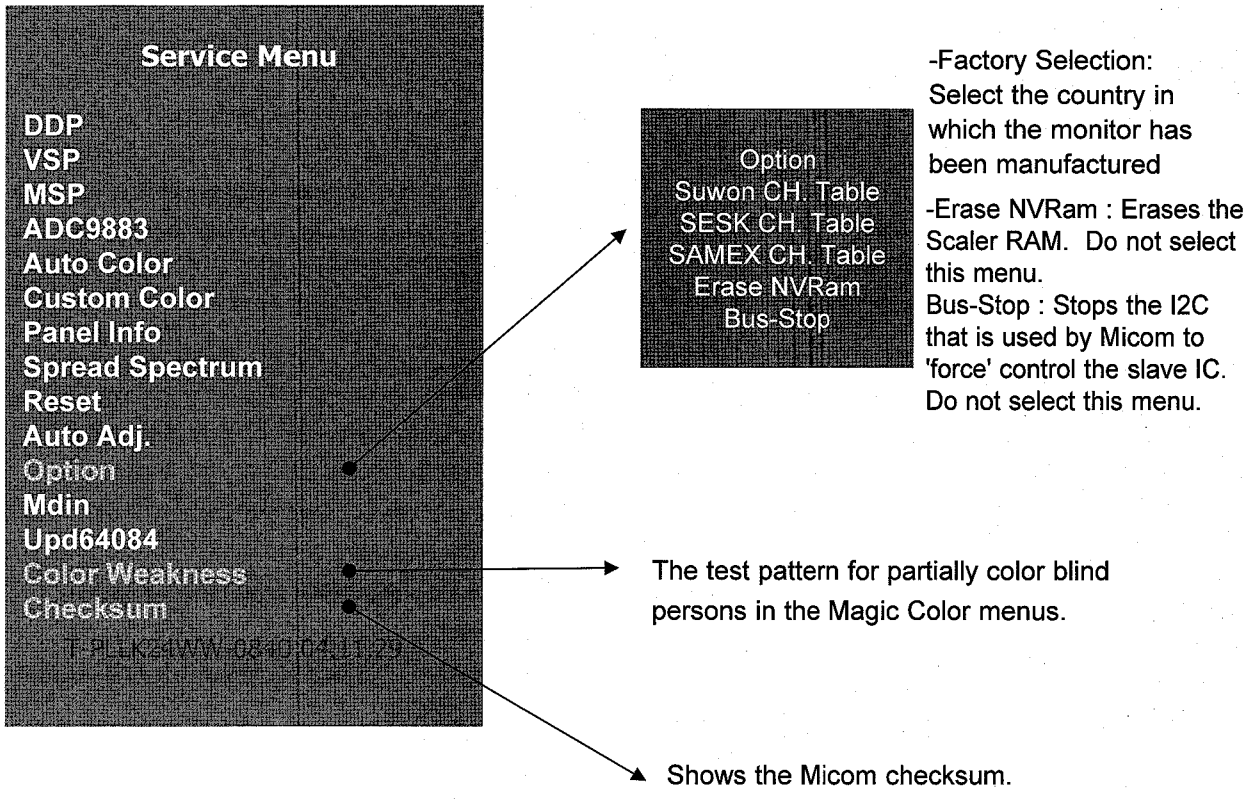
Factory reset: Resets to the factory settings.
(Since the monitor is turned off after a reset, turn it on)

On: Enables Auto Adjustment
Off: Disables Auto Adjustment

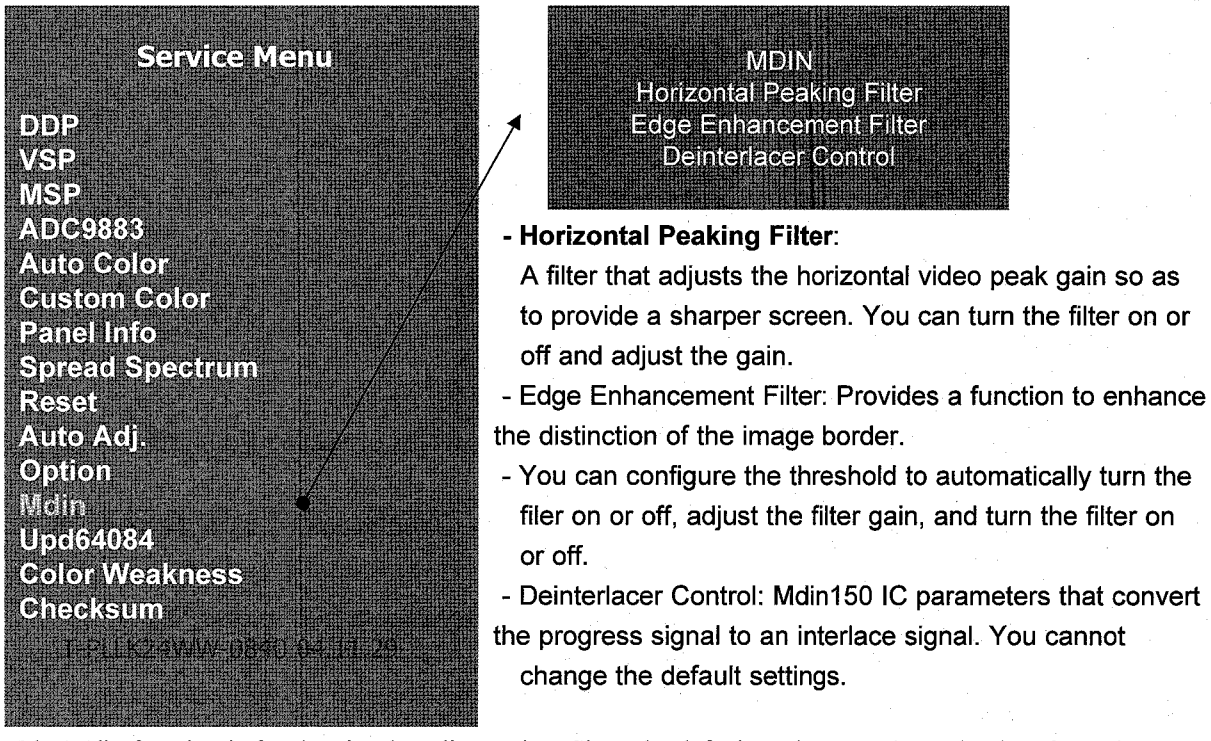


Auto Adj: Enables or disables the function to apply Auto Adjustment to an unadjusted signal when it is supplied.

-Option/Color Weakness/Checksum



-Upd64084

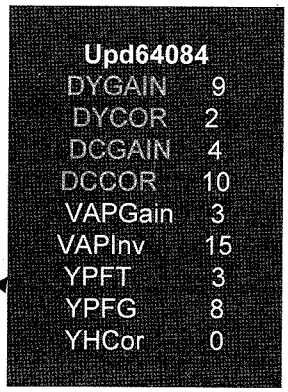


- Horizontal Peaking Filter:
A filter that adjusts the horizontal video peak gain so as to provide a sharper screen. You can turn the filter on or off and adjust the gain.

- Edge Enhancement Filter: Provides a function to enhance the distinction of the image border.
- You can configure the threshold to automatically turn the filer on or off, adjust the filter gain, and turn the filter on or off.
- Deinterlacer Control: Mdin150 IC parameters that convert the progress signal to an interlace signal. You cannot change the default settings.

-The Mdin function is for the visual quality setting. Since the default settings are the optimal settings, do not change the settings.

-Mdin 150

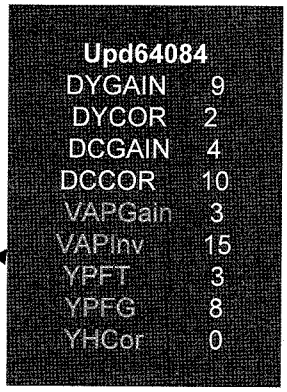


If the value of the Coring is low, it is close to a moving picture. If the value is high, it is close to a still picture. (Common for Y and C)
If the value of the Gain is low, it is close to a still picture. If the value is high, it is close to a moving picture. (Common for Y and C)

- DYGAIN : The Motion Detection Gain of Y that is used when separating Y and C.
- DYCOR : The Threshold Level to determine whether Y is a moving picture or a still picture.
- DCGAIN : The Motion Detection Gain of C that is used when separating Y and C.
- DYCOR : The Threshold Level to determine whether C is a moving picture or a still picture.

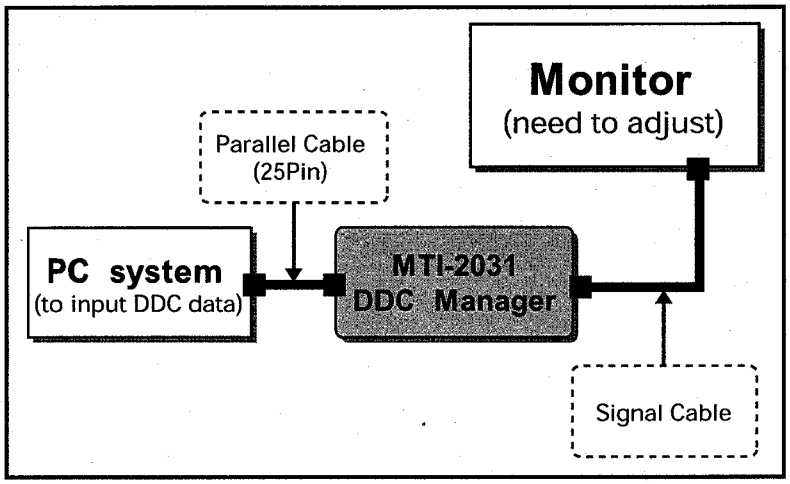
-Upd64084 is an IC that separates the CVBS signal into Y (contrast signal) and C (color signal). Do not change the default settings.

-Upd64084



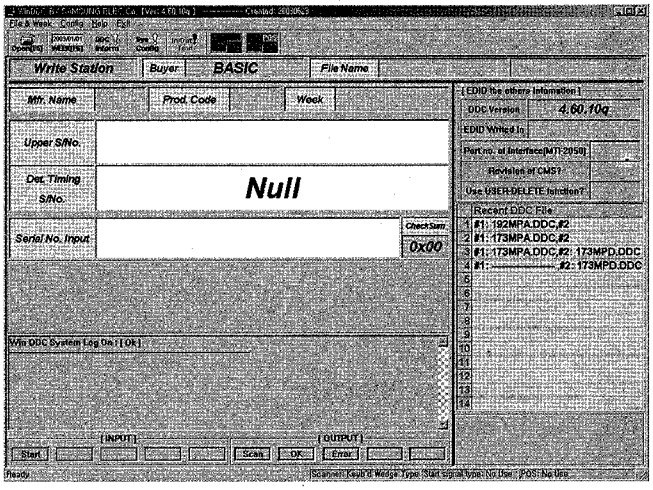
- VAPGain : The Vertical Compensation Gain of the video signal
- VAPInv : The Vertical Compensation Convergence Point of the video signal
- YPFT : The center frequency of the Contrast Signal Peaking Filter
- YPFG : The Gain of the Contrast Signal Peaking Filter
- YHCor : The Coring of the contrast signal in high frequency.

3-3 DDC jig installation

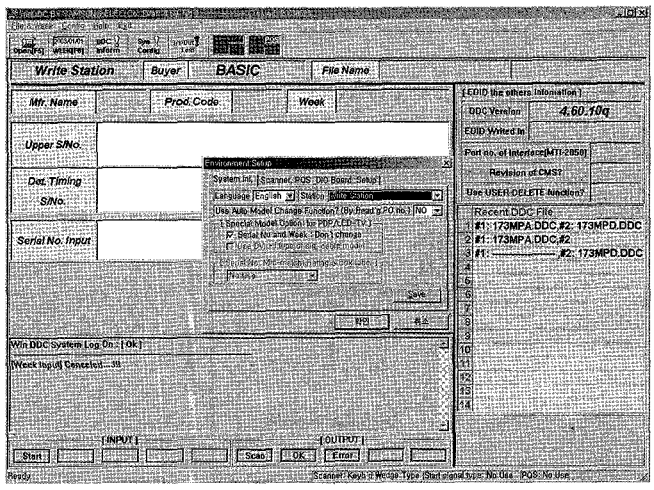


* Please use DVI cable connection adapter for DVI input.

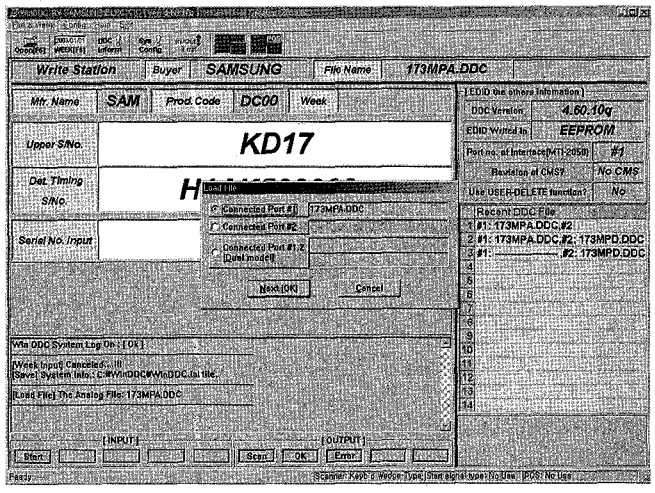
3-4 How to execute DDC



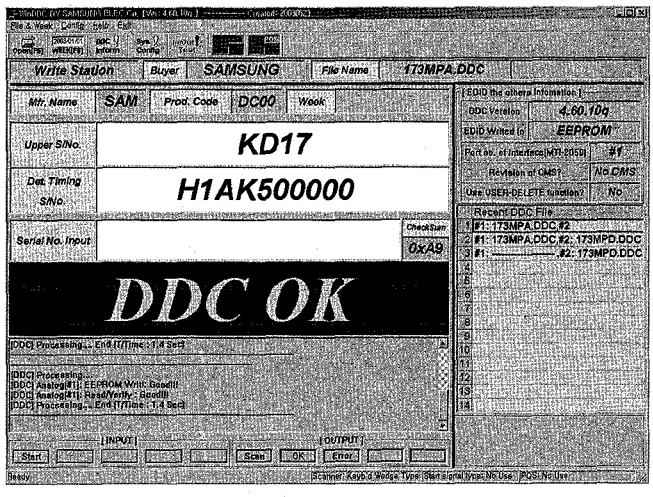
1. Execute "WinDDC.exe"



2. Click "Sys Config"
   Select "Station : Write station".
   Check "Serial No and Week : Don't change"
   Click "Save"

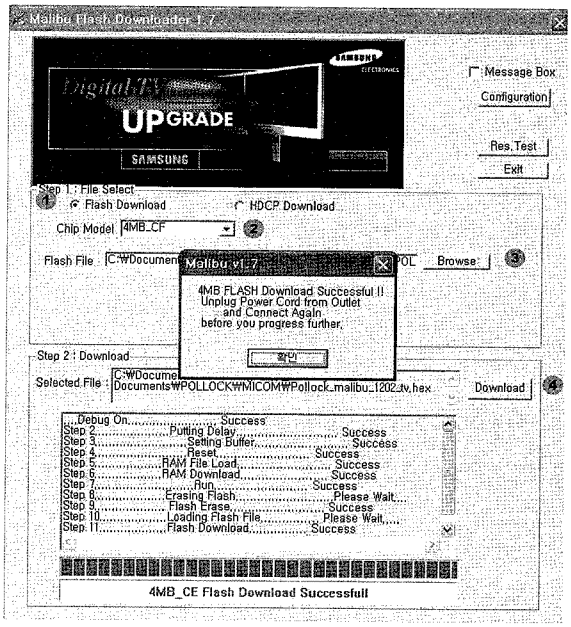


3. Click "Open" icon.
   Select "Connected Port #1" and Next "OK".
   *File Name - 242MPA.DDC : Analog
   242MPD.DDC : DVI
   Press enter key on your keyboard.



4. Confirm the "DDC OK".

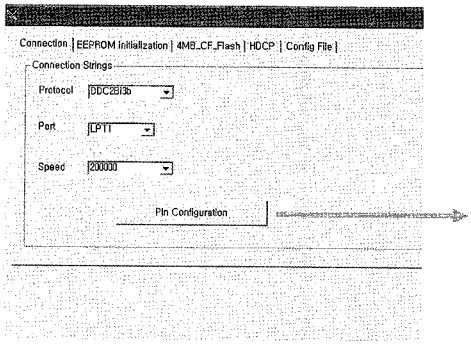
3-5 Micom program upgrade

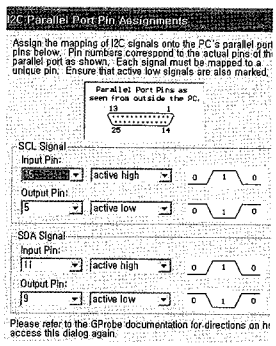


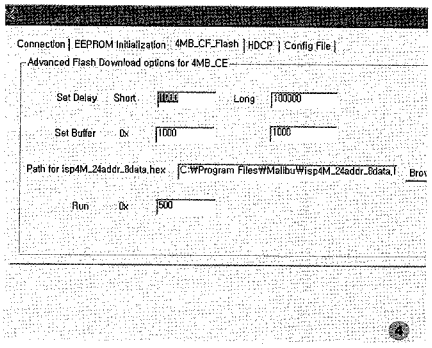
Make a connection as done for DDC input, and supply power to the set.

Run the Malibu Flash Downloader 1.7 program.

1. Select Flash Download.
2. Select 4MB_CF.
3. Select a program to download.
4. Click the Download button.
   In Step 11, the Download Successful message appears when the download is complete.



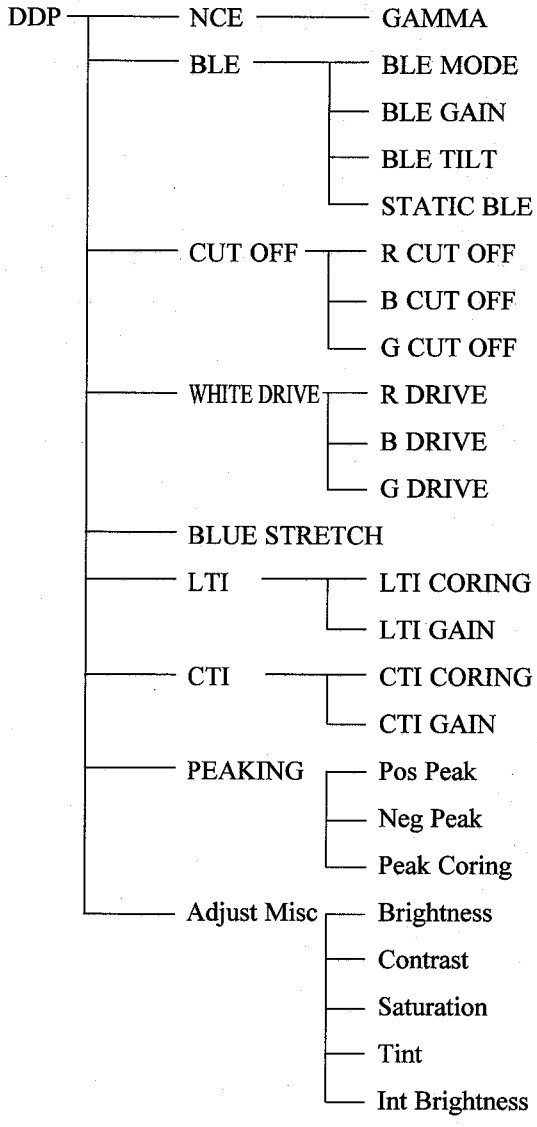

I2C Parallel Port Pin Assignments
Assign the mapping of I2C signals onto the PC's parallel port pins below. Pin numbers correspond to the actual pins of the parallel port as shown. Each signal must be mapped to a unique pin. Ensure that active low signals are also marked.
Parallel Port Pins as seen from outside the PC.
SCL Signal
Input Pin:
active high
Output Pin:
5
active low
SDA Signal
Input Pin:
11
active high
Output Pin:
9
active low
Please refer to the GProbe documentation for directions on how access this dialog again.


Connection | EEPROM Initialization | 4MB_CF_Flash | HDCP | Config File |
Advanced Flash Download options for 4MB_CE
Set Delay Short 10000 Long 100000
Set Buffer 0x 1000 1000
Path for isp4M_24addr_8data.hex C:\Program Files\Malibu\isp4M_24addr_8data.l
Run 0x 500

Please refer to the settings.

3-6 Factory Mode Adjustments

3-6-1 Factory Mode OSD



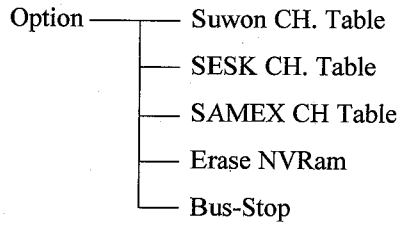
- VSP
  - Brightness
  - Contrast
  - Cb Saturation
  - Cr Saturation
  - Tint
- MSP
  - FM - AM - Presc
  - NICAM - Presc
  - SCART - Presc
  - BBE

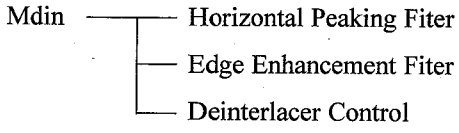
- ADC 9883
  - RED Gain
  - BLUE Gain
  - GREEN Gain
  - RED Offset
  - BLUE Offset
  - GREEN Offset
- Auto Color
- Custom Color
  - RED Gain
  - GREEN Gain
  - BLUE Gain
  - RED Offset
  - GREEN Offset
  - BLUE Offset

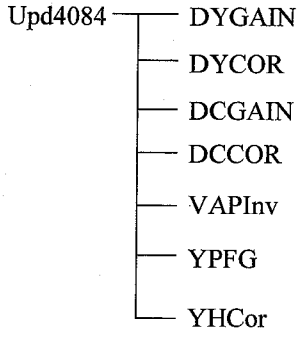
- Panel Info
  - Total Hr
  - Upper Lamp Hr
  - Lower Lamp Hr

- Spread Spectum
  - Spread sp
  - Amplitude
  - Period

- Reset
- Auto Adj
  - Off
  - On





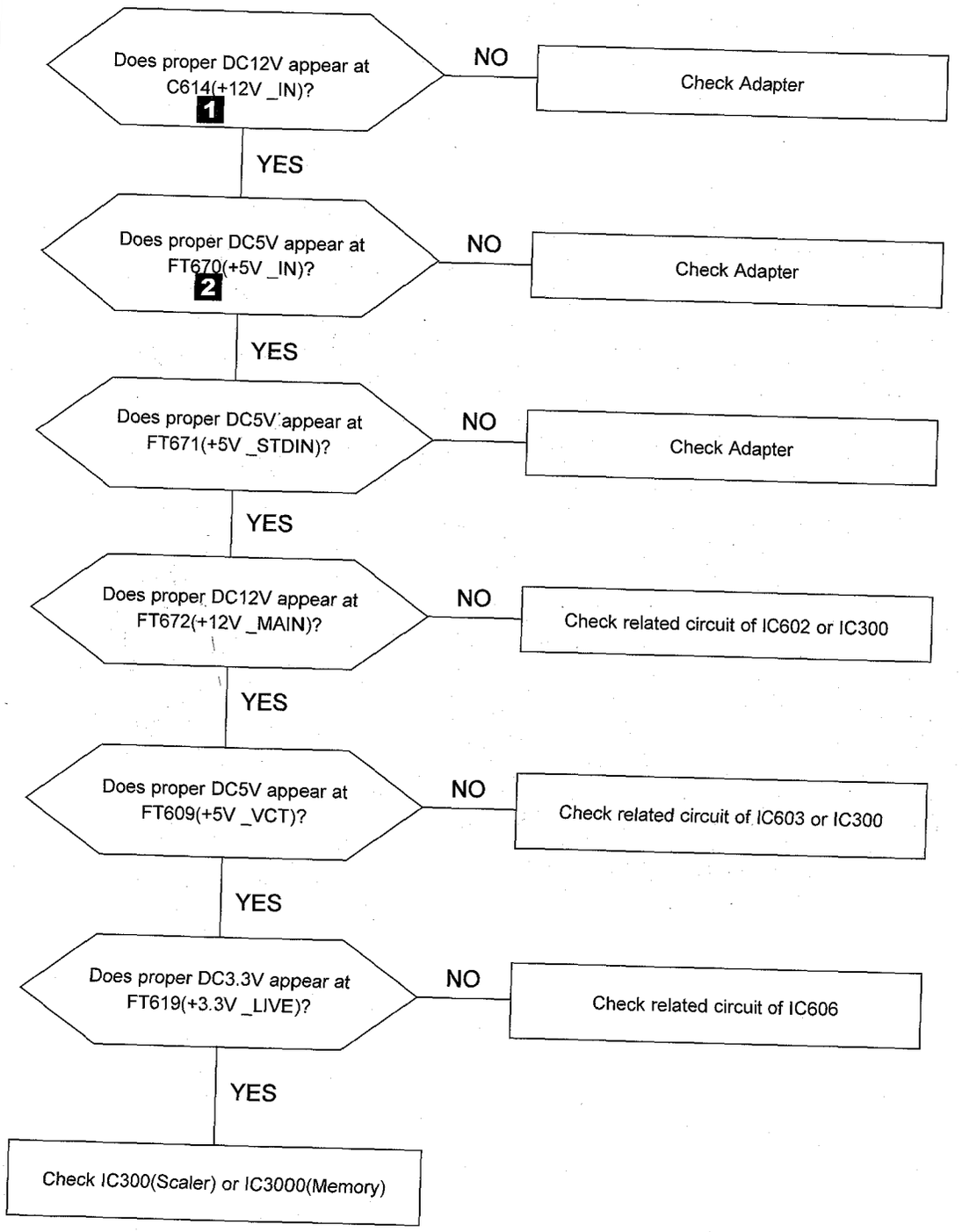


Color weakness-Testpattern

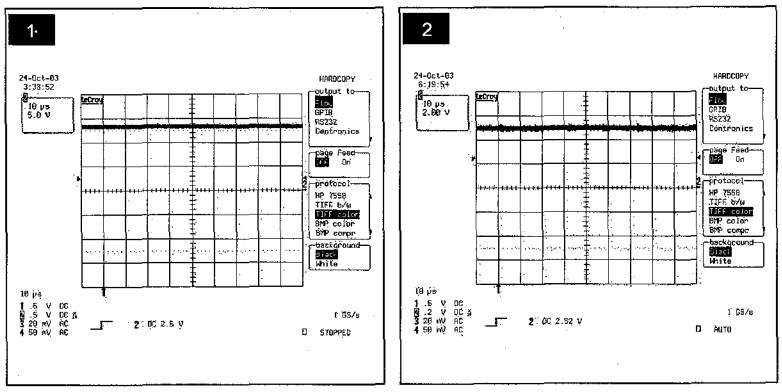
Check Sum

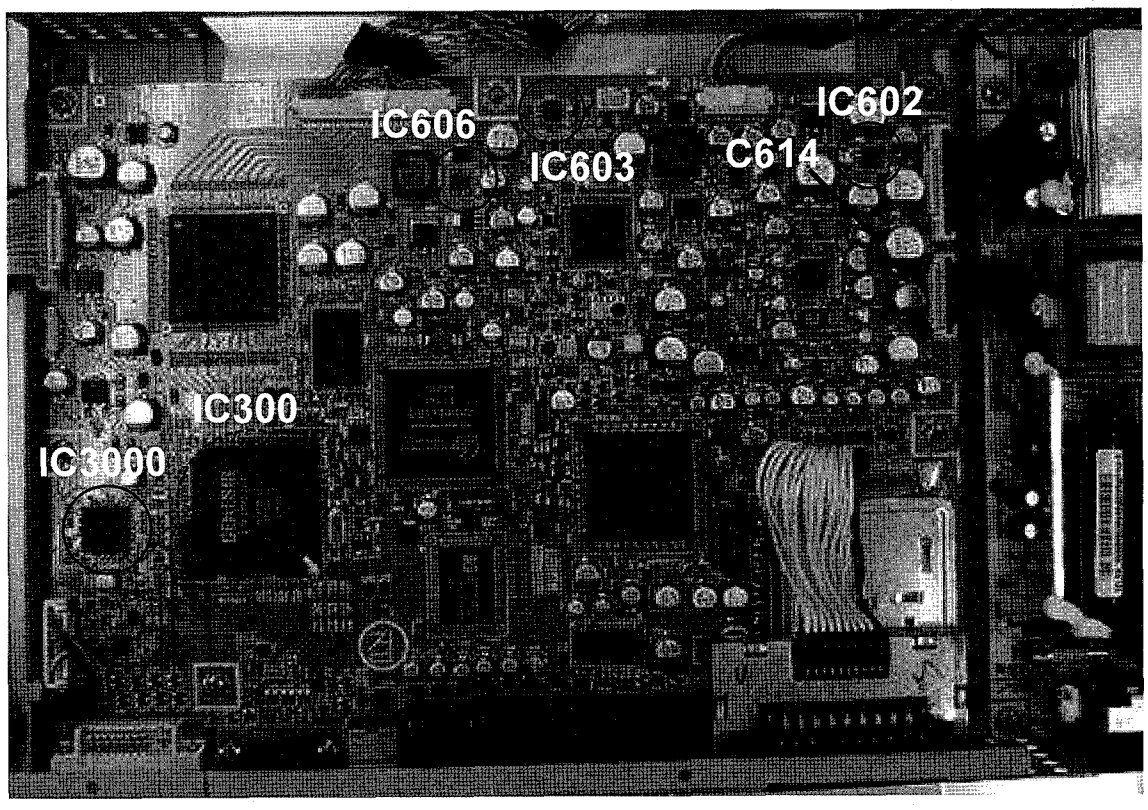
4 Troubleshooting

4-1 No Power

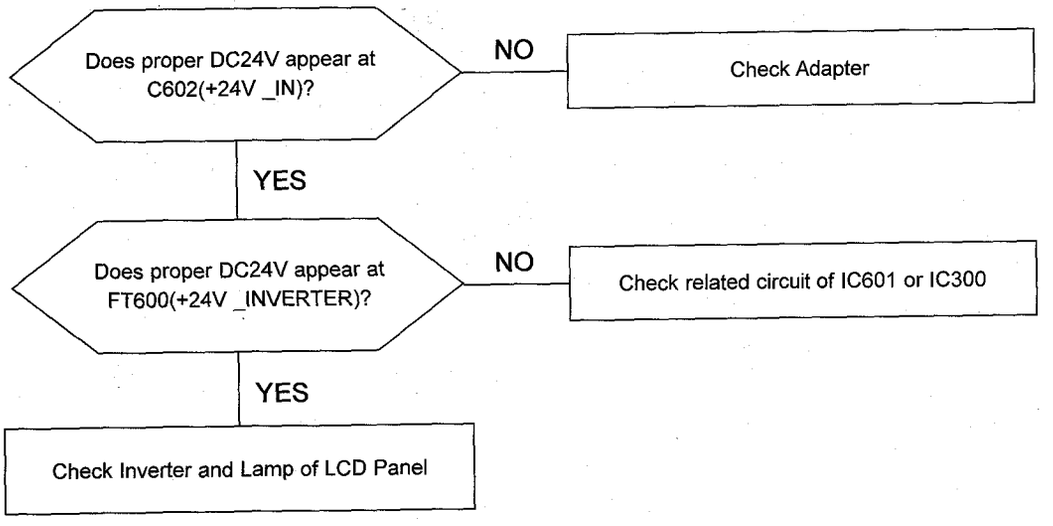


WAVEFORMS



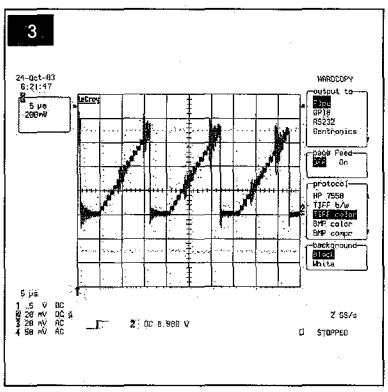


4-2 No Lamp

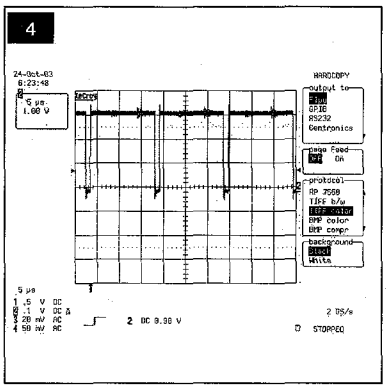

Does proper DC24V appear at C602(+24V _IN)?
NO
Check Adapter
YES
Does proper DC24V appear at FT600(+24V _INVERTER)?
NO
Check related circuit of IC601 or IC300
YES
Check Inverter and Lamp of LCD Panel

WAVEFORMS

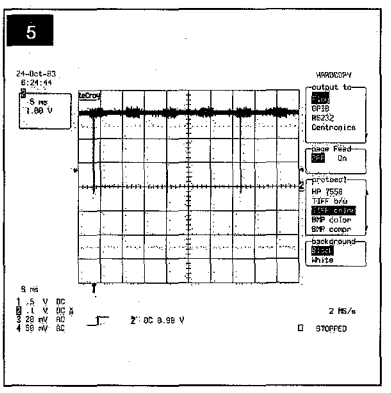
3



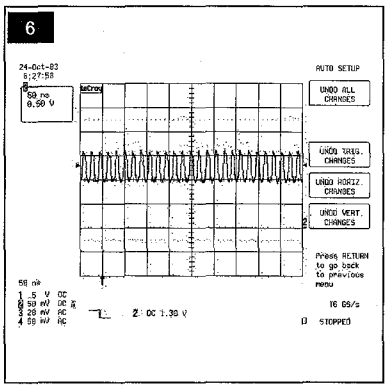
4

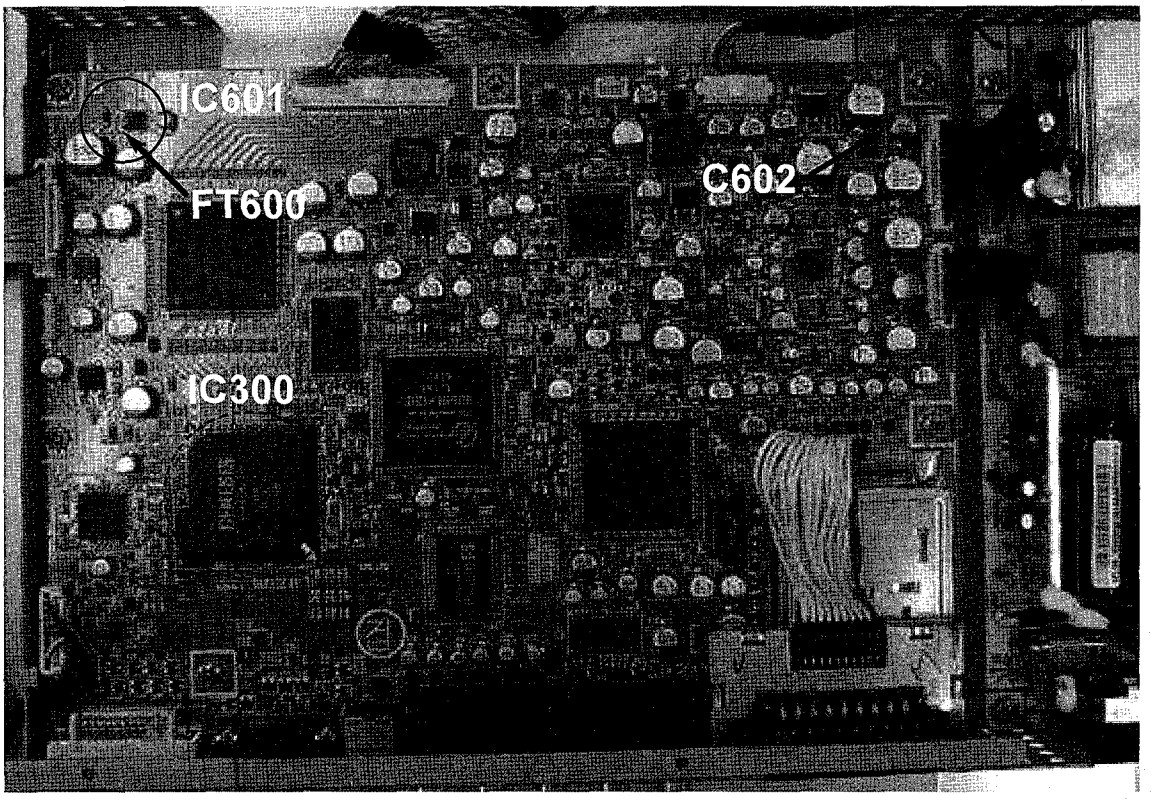


5

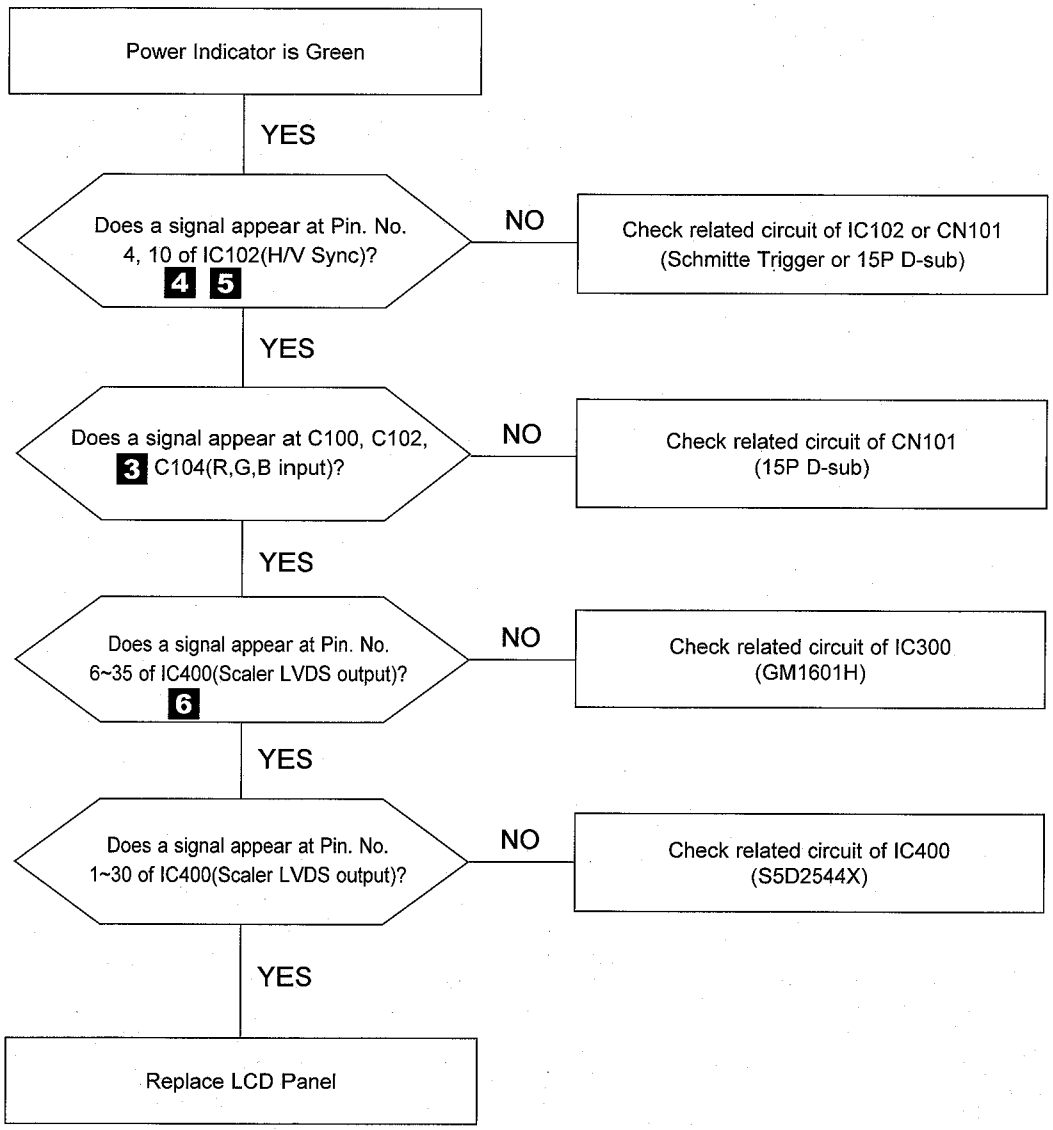


6



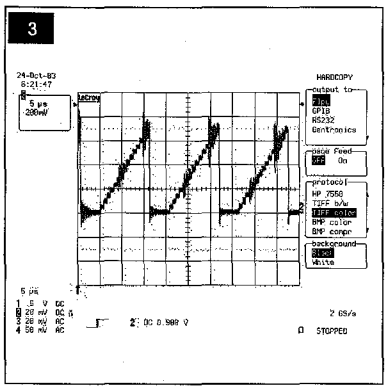


4-3 No Video (PC Signal)

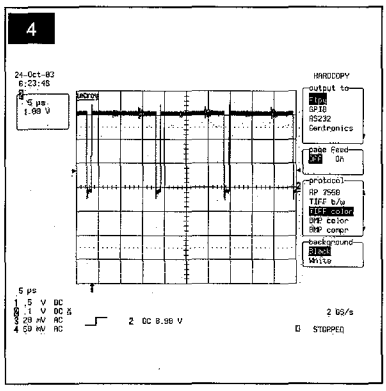

Power Indicator is Green
YES
Does a signal appear at Pin. No. 4, 10 of IC102(H/V Sync)? 4 5
NO
Check related circuit of IC102 or CN101 (Schmitte Trigger or 15P D-sub)
YES
Does a signal appear at C100, C102, 3 C104(R,G,B input)?
NO
Check related circuit of CN101 (15P D-sub)
YES
Does a signal appear at Pin. No. 6~35 of IC400(Scaler LVDS output)? 6
NO
Check related circuit of IC300 (GM1601H)
YES
Does a signal appear at Pin. No. 1~30 of IC400(Scaler LVDS output)?
NO
Check related circuit of IC400 (S5D2544X)
YES
Replace LCD Panel

WAVEFORMS

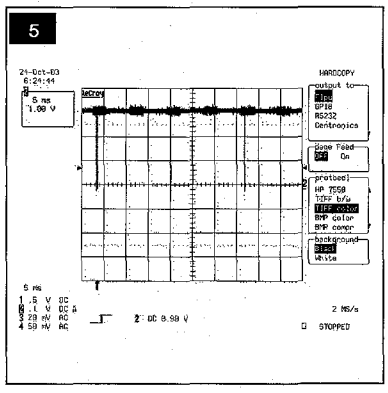
3



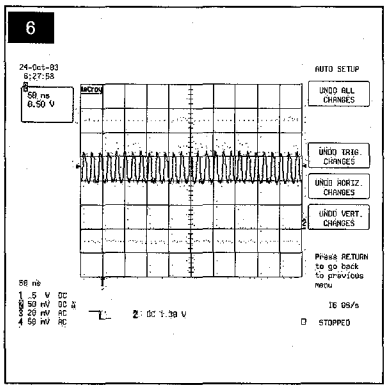
4

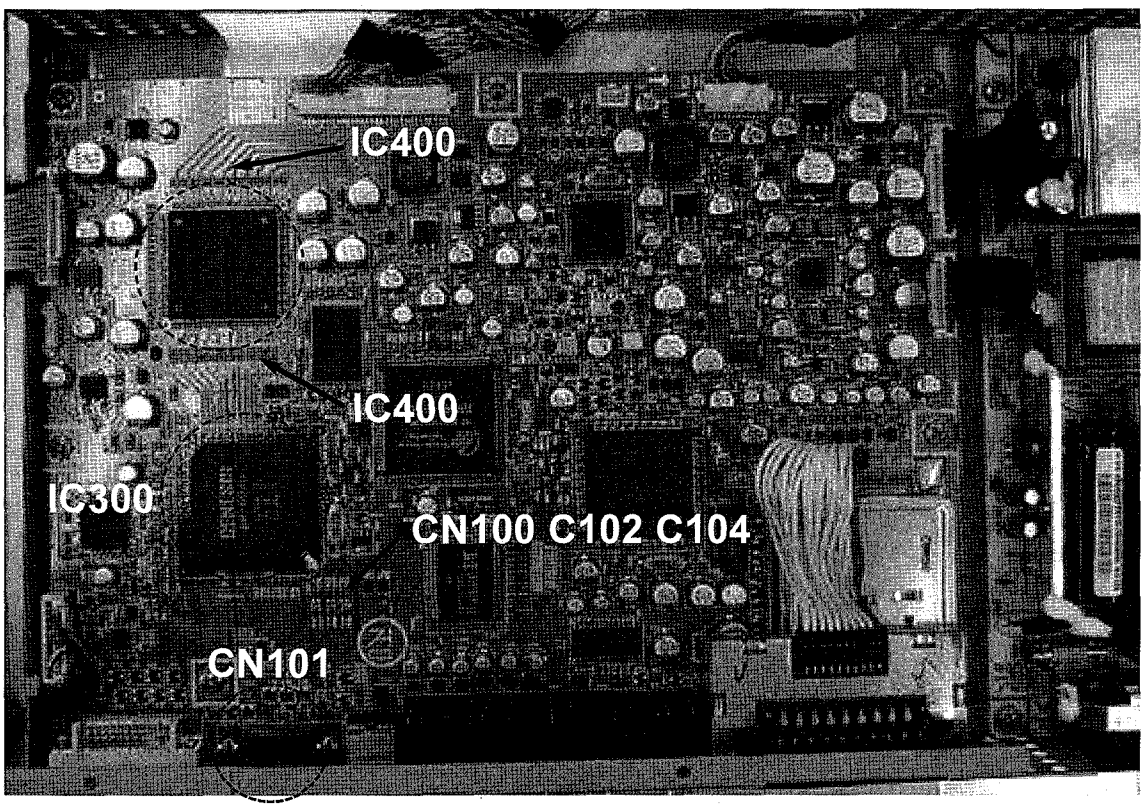


5

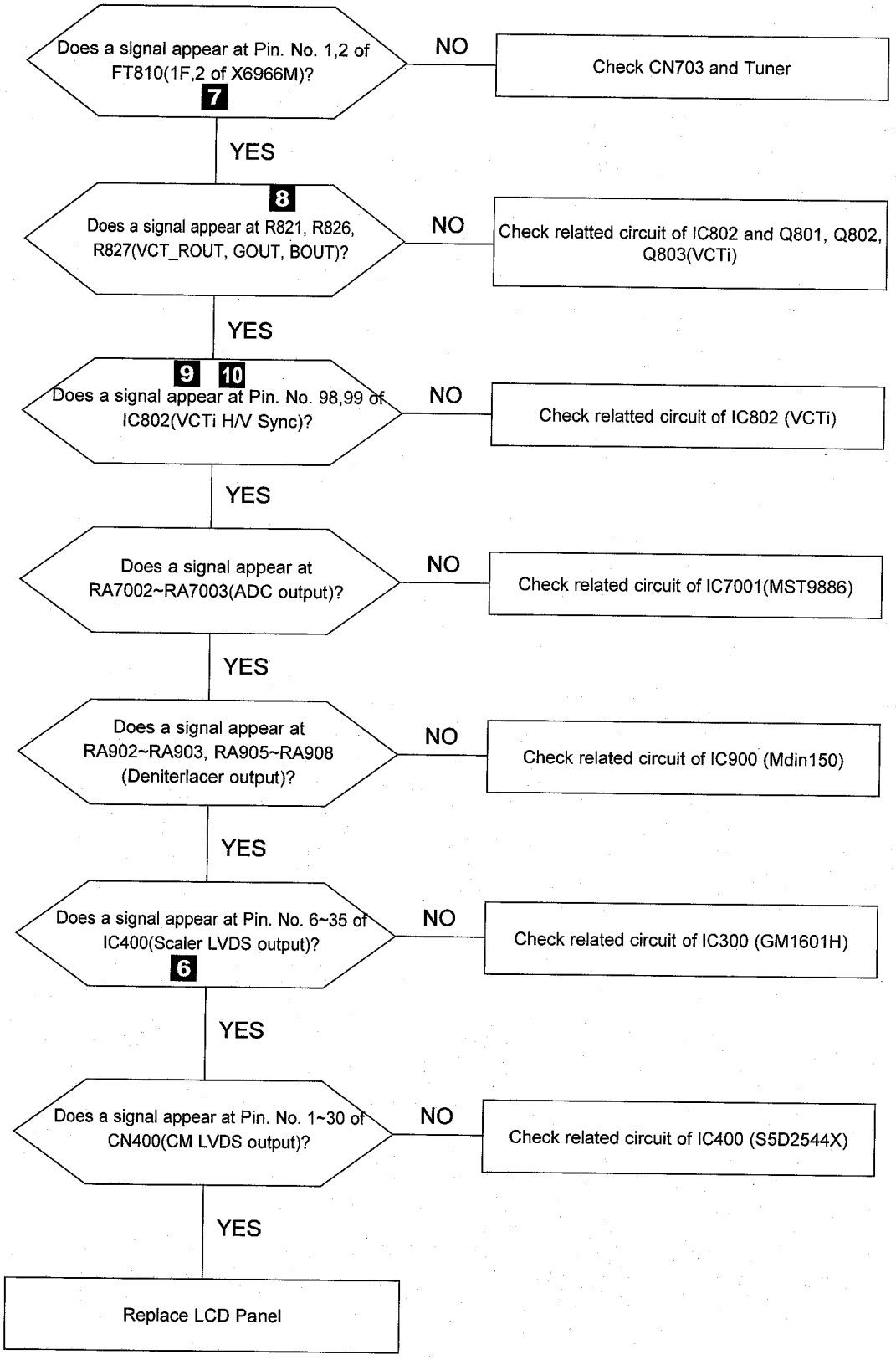


6



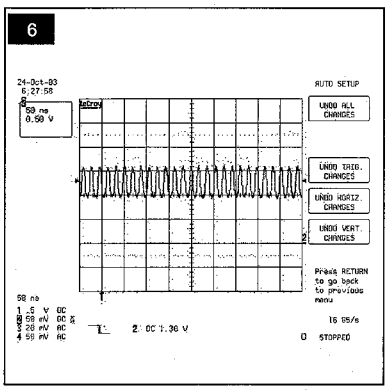


4-4 No Picture (TV Signal)

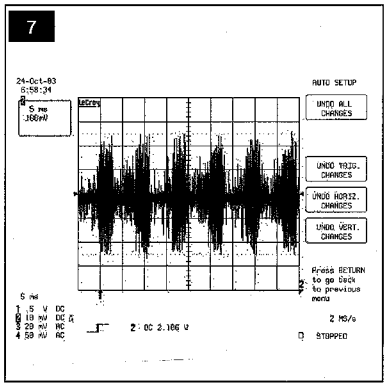

Does a signal appear at Pin. No. 1,2 of FT810(1F,2 of X6966M)?
7
NO
Check CN703 and Tuner
YES
8
Does a signal appear at R821, R826, R827(VCT_ROUT, GOUT, BOUT)?
NO
Check relatted circuit of IC802 and Q801, Q802, Q803(VCTi)
YES
9 10
Does a signal appear at Pin. No. 98,99 of IC802(VCTi H/V Sync)?
NO
Check relatted circuit of IC802 (VCTi)
YES
Does a signal appear at RA7002~RA7003(ADC output)?
NO
Check related circuit of IC7001(MST9886)
YES
Does a signal appear at RA902~RA903, RA905~RA908 (Deniterlacer output)?
NO
Check related circuit of IC900 (Mdin150)
YES
Does a signal appear at Pin. No. 6~35 of IC400(Scaler LVDS output)?
6
NO
Check related circuit of IC300 (GM1601H)
YES
Does a signal appear at Pin. No. 1~30 of CN400(CM LVDS output)?
NO
Check related circuit of IC400 (S5D2544X)
YES
Replace LCD Panel

WAVEFORMS

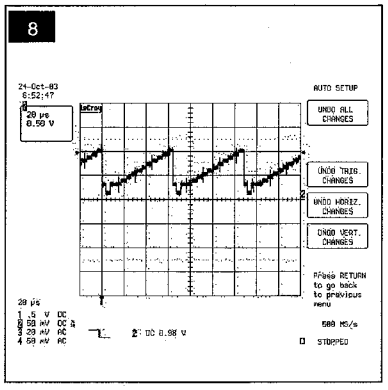
6



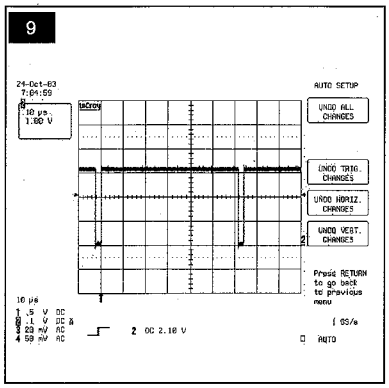
7



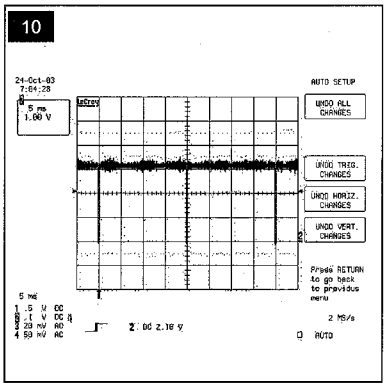
8

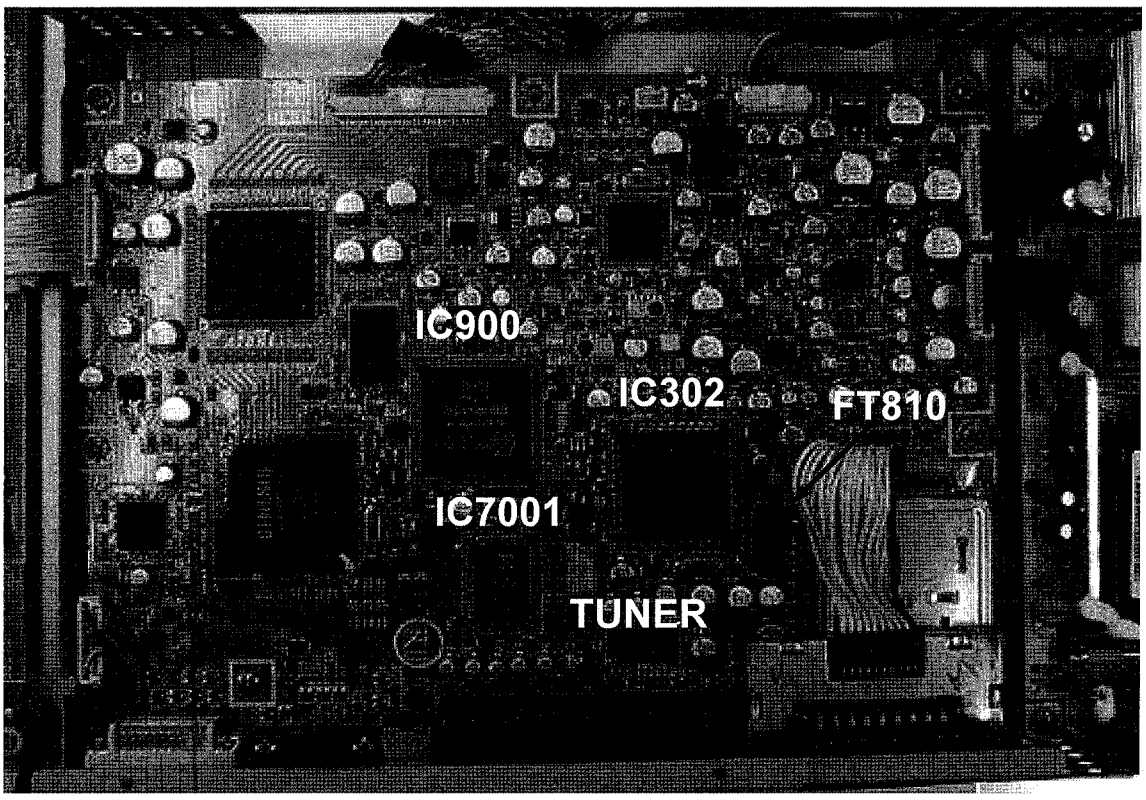


9

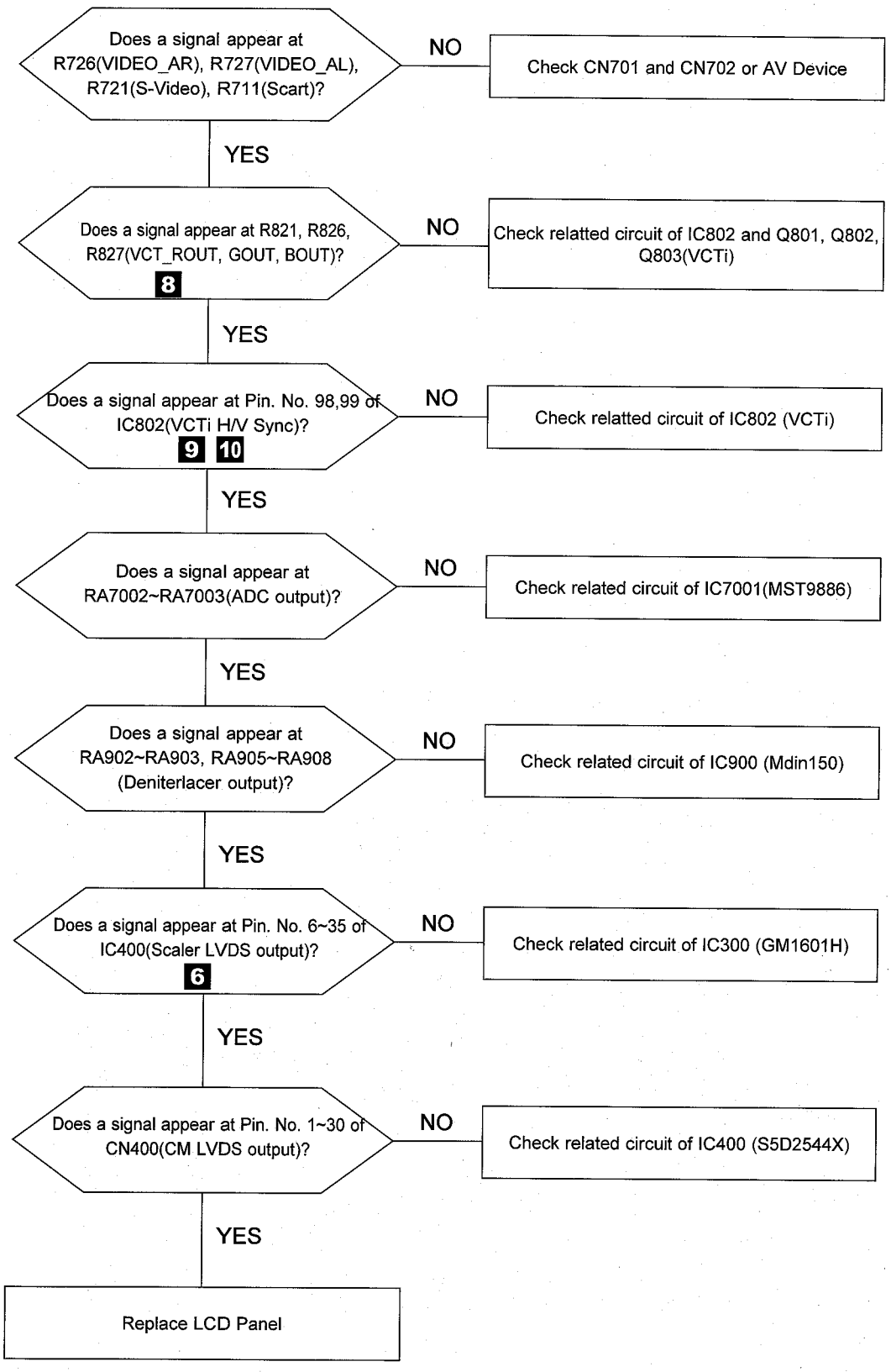


10



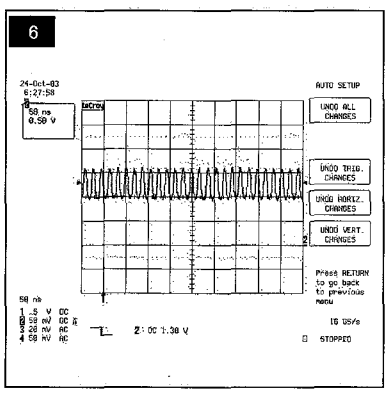


4-5 No Picture (Video, S-Video, Scart)

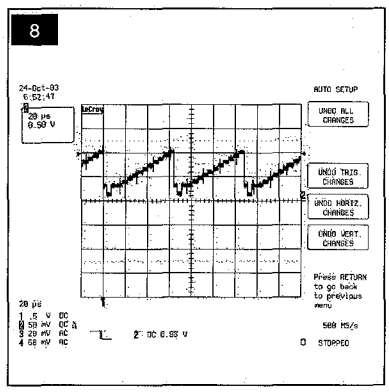

Does a signal appear at R726(VIDEO_AR), R727(VIDEO_AL), R721(S-Video), R711(Scart)?
NO
Check CN701 and CN702 or AV Device
YES
Does a signal appear at R821, R826, R827(VCT_ROUT, GOUT, BOUT)?
8
NO
Check relatted circuit of IC802 and Q801, Q802, Q803(VCTi)
YES
Does a signal appear at Pin. No. 98,99 of IC802(VCTi H/V Sync)?
9 10
NO
Check relatted circuit of IC802 (VCTi)
YES
Does a signal appear at RA7002~RA7003(ADC output)?
NO
Check related circuit of IC7001(MST9886)
YES
Does a signal appear at RA902~RA903, RA905~RA908 (Deniterlacer output)?
NO
Check related circuit of IC900 (Mdin150)
YES
Does a signal appear at Pin. No. 6~35 of IC400(Scaler LVDS output)?
6
NO
Check related circuit of IC300 (GM1601H)
YES
Does a signal appear at Pin. No. 1~30 of CN400(CM LVDS output)?
NO
Check related circuit of IC400 (S5D2544X)
YES
Replace LCD Panel

WAVEFORMS

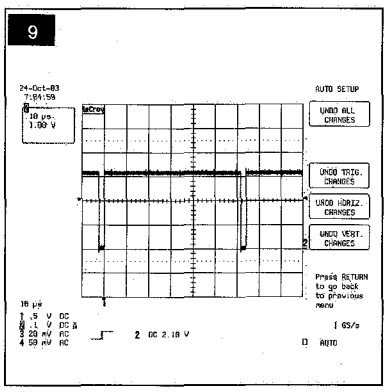
6



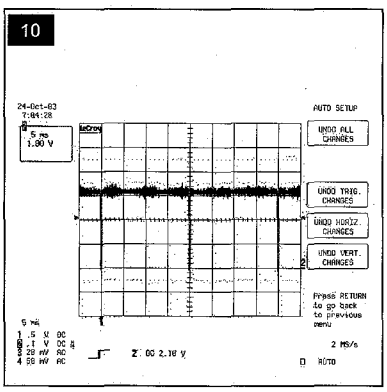
8

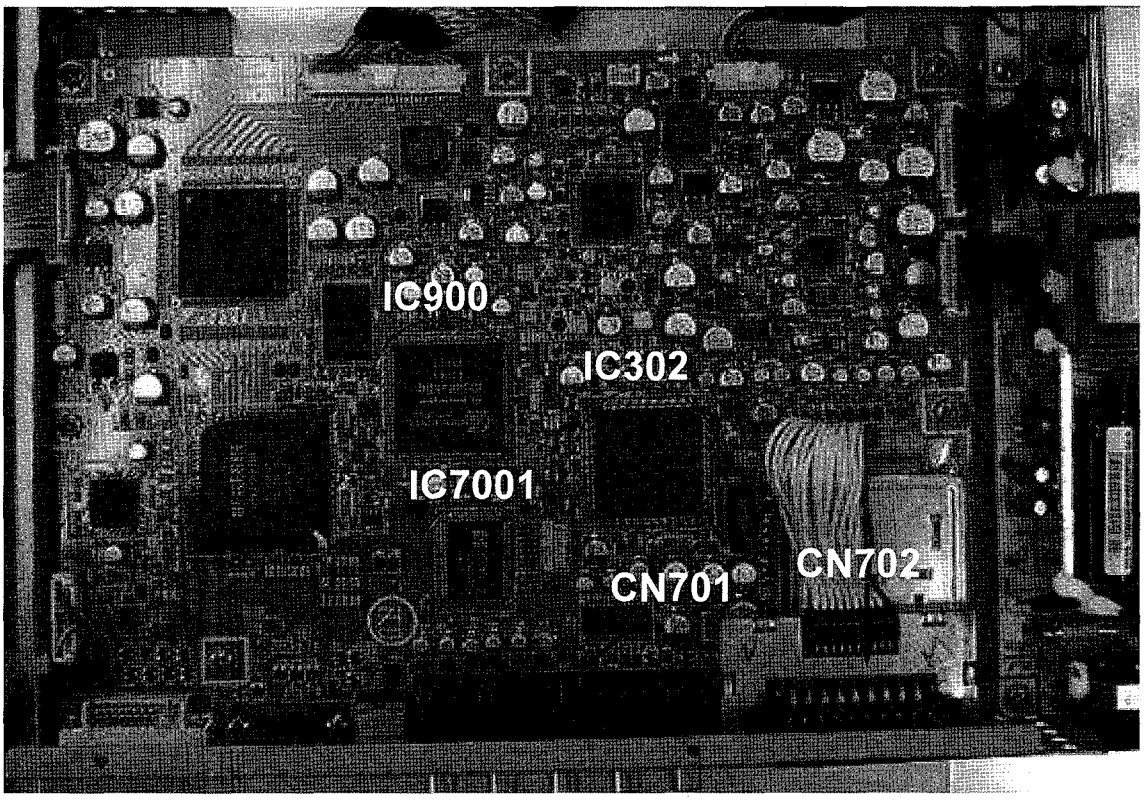


9

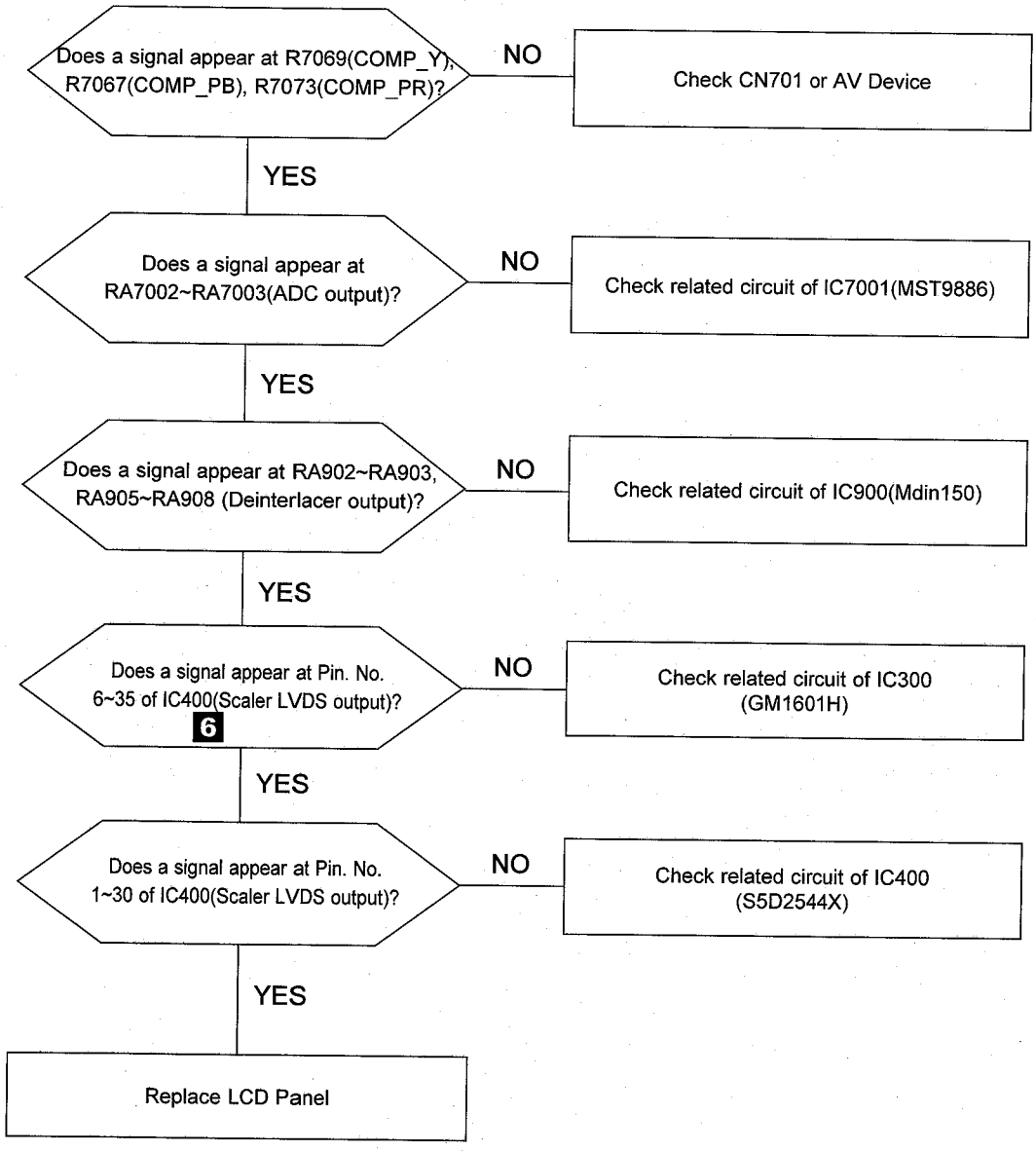


10

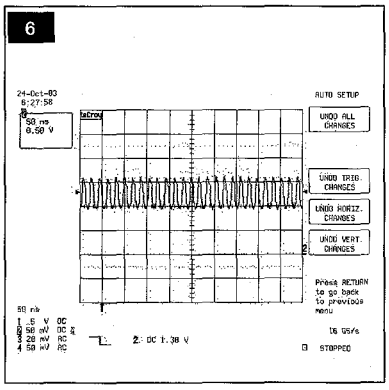


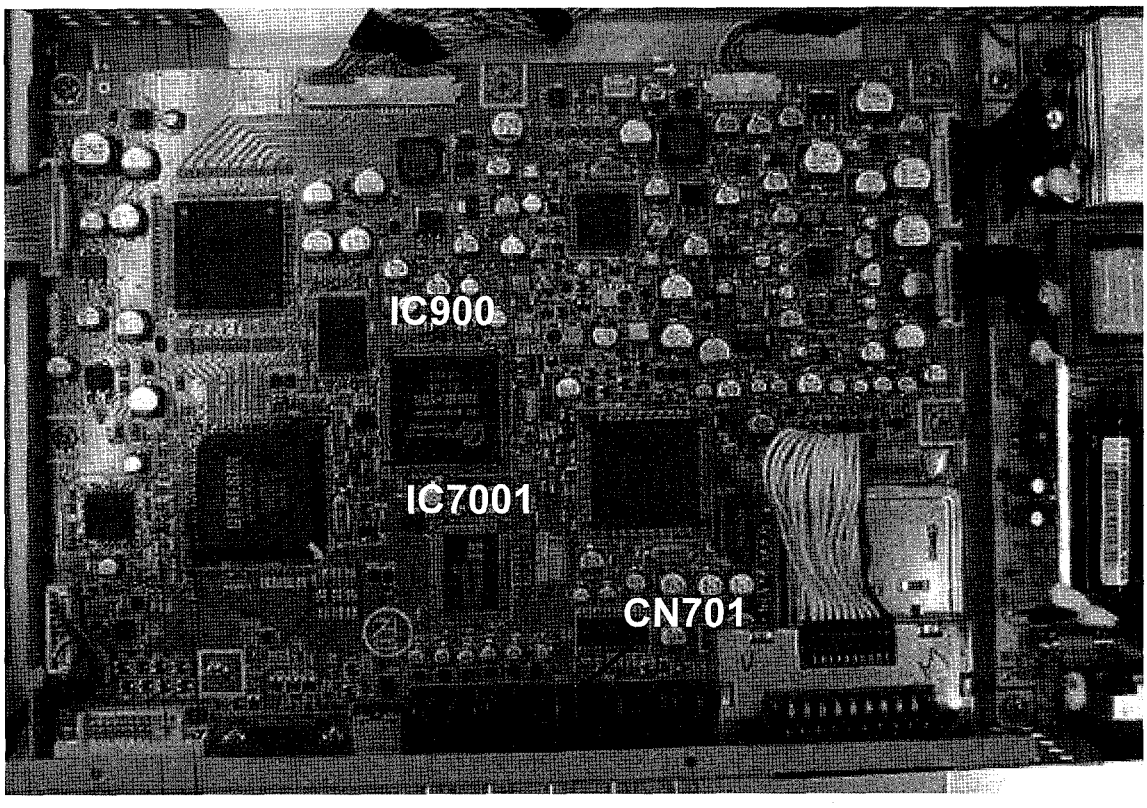


4-6 No Picture(COMPONENT)

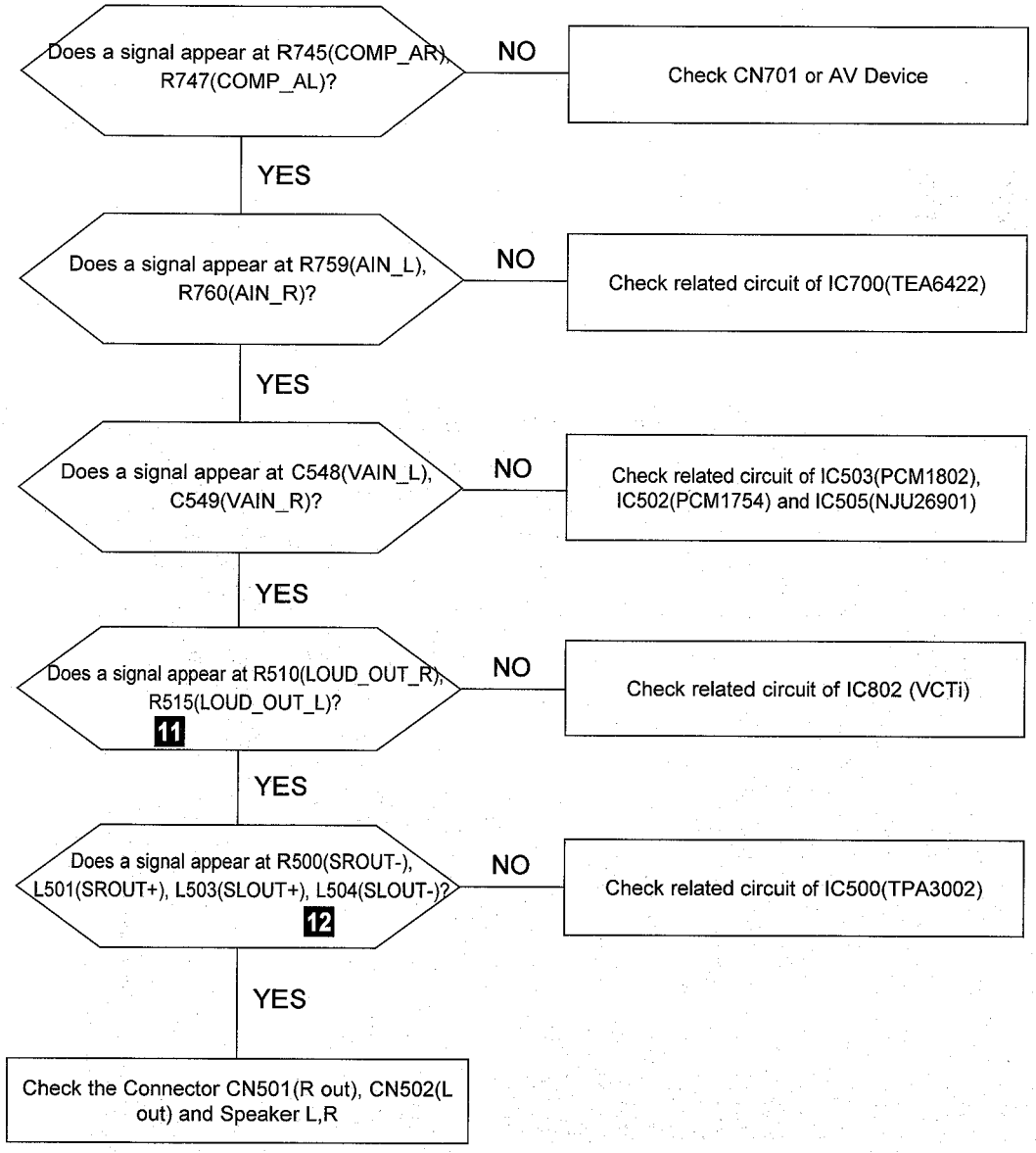

Does a signal appear at R7069(COMP_Y), R7067(COMP_PB), R7073(COMP_PR)?
NO
Check CN701 or AV Device
YES
Does a signal appear at RA7002~RA7003(ADC output)?
NO
Check related circuit of IC7001(MST9886)
YES
Does a signal appear at RA902~RA903, RA905~RA908 (Deinterlacer output)?
NO
Check related circuit of IC900(Mdin150)
YES
Does a signal appear at Pin. No. 6~35 of IC400(Scaler LVDS output)?
6
NO
Check related circuit of IC300 (GM1601H)
YES
Does a signal appear at Pin. No. 1~30 of IC400(Scaler LVDS output)?
NO
Check related circuit of IC400 (S5D2544X)
YES
Replace LCD Panel

WAVEFORMS


6
24-Oct-03
6:27:58
50 ns
0.50 V
AUTO SETUP
UNDO ALL CHANGES
UNDO TRIG. CHANGES
UNDO HORIZ. CHANGES
UNDO VERT. CHANGES
Press RETURN to go back to previous menu
50 mV
2: DC 1.38 V
STOPPED

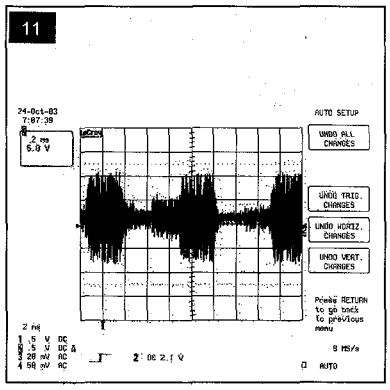

IC900
IC7001
CN701

4-7 No Sound(Component)

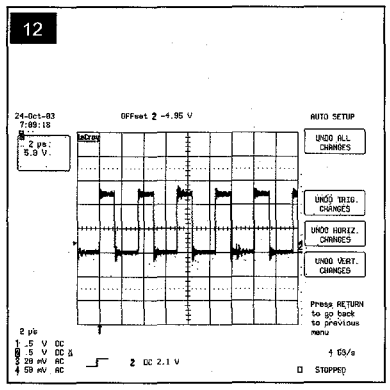


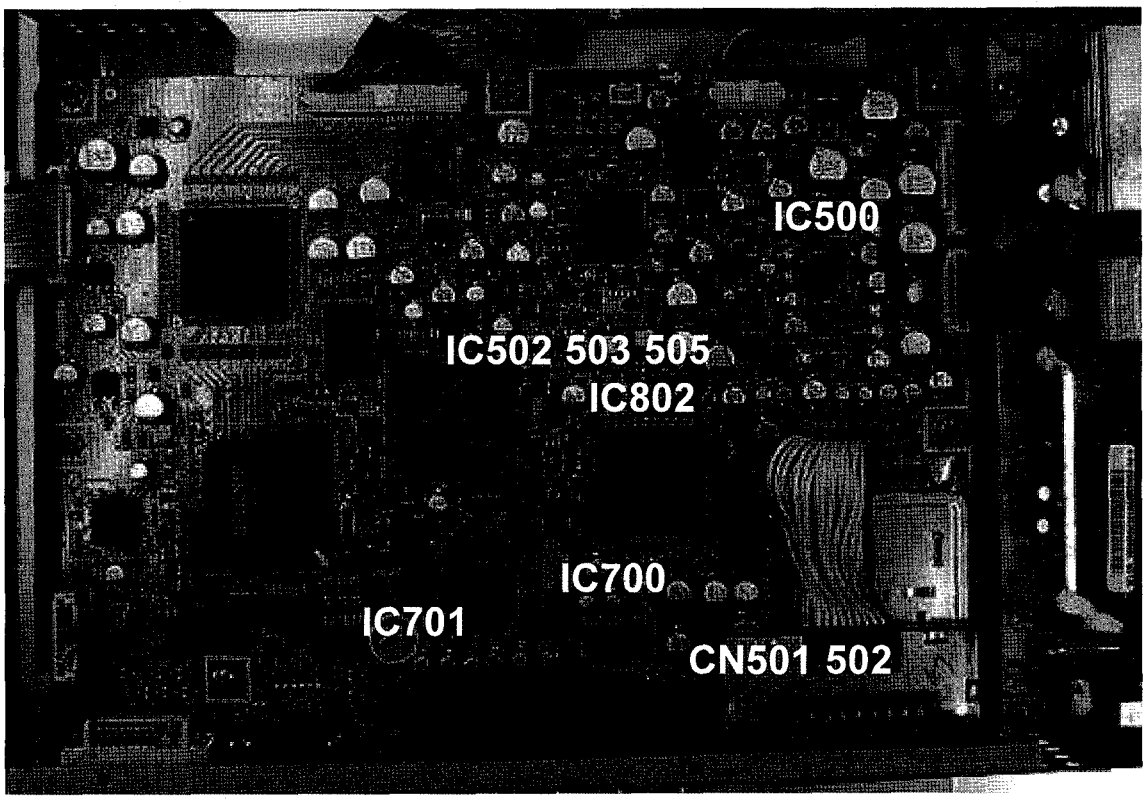
WAVEFORMS

11

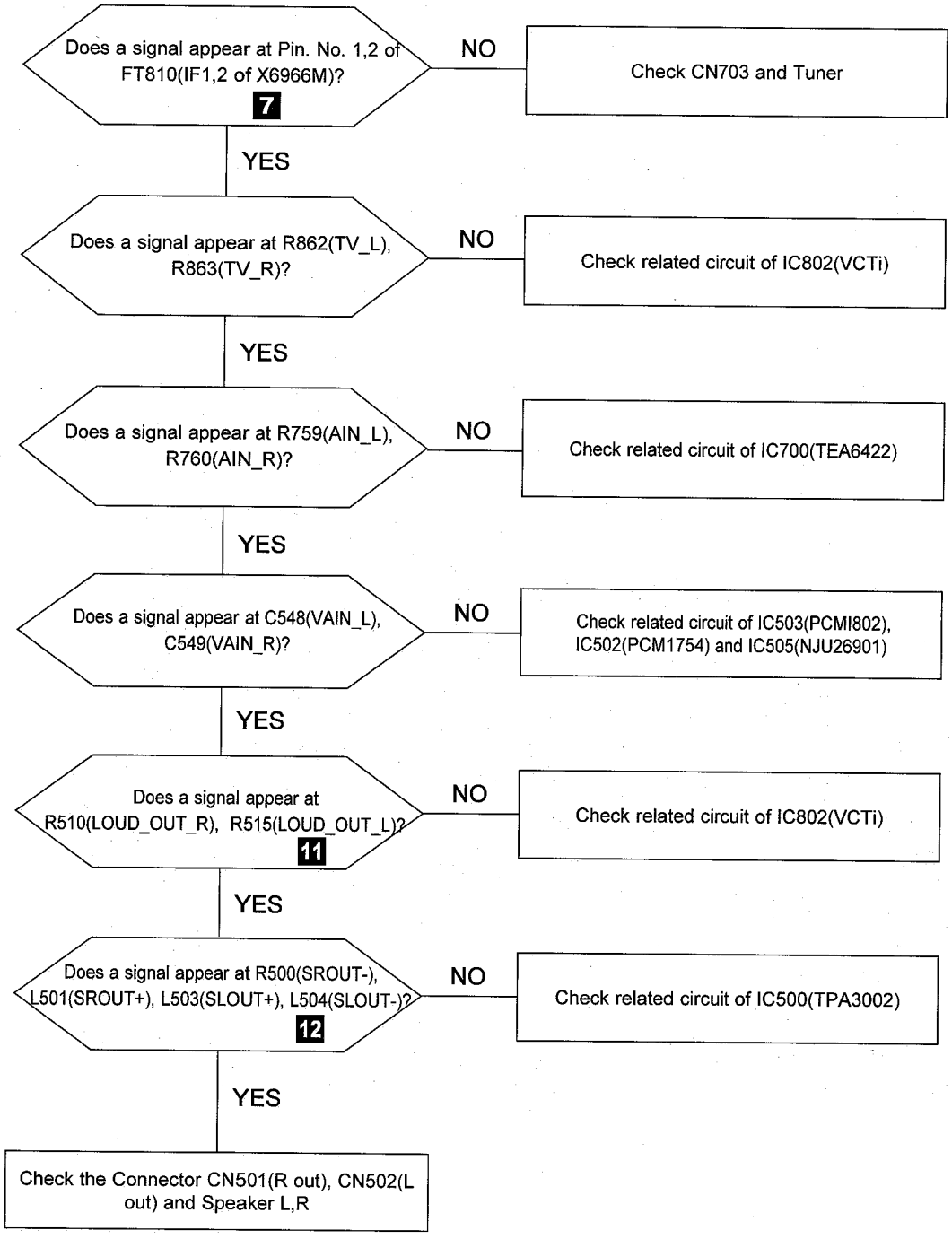


12

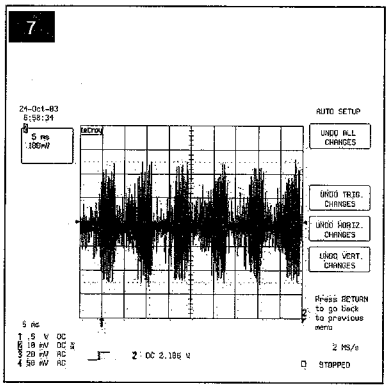


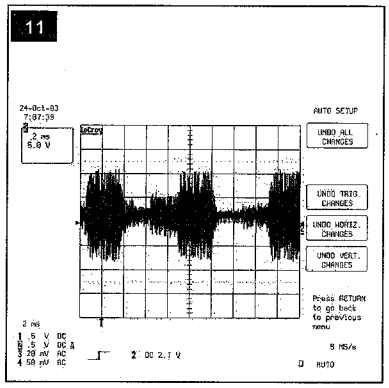


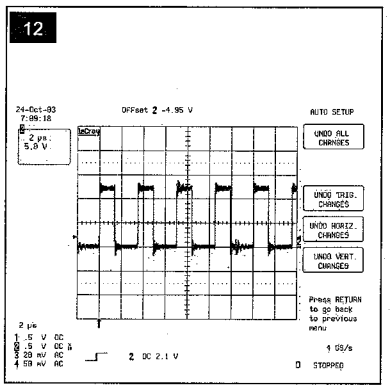
4-8 No Sound(TV)

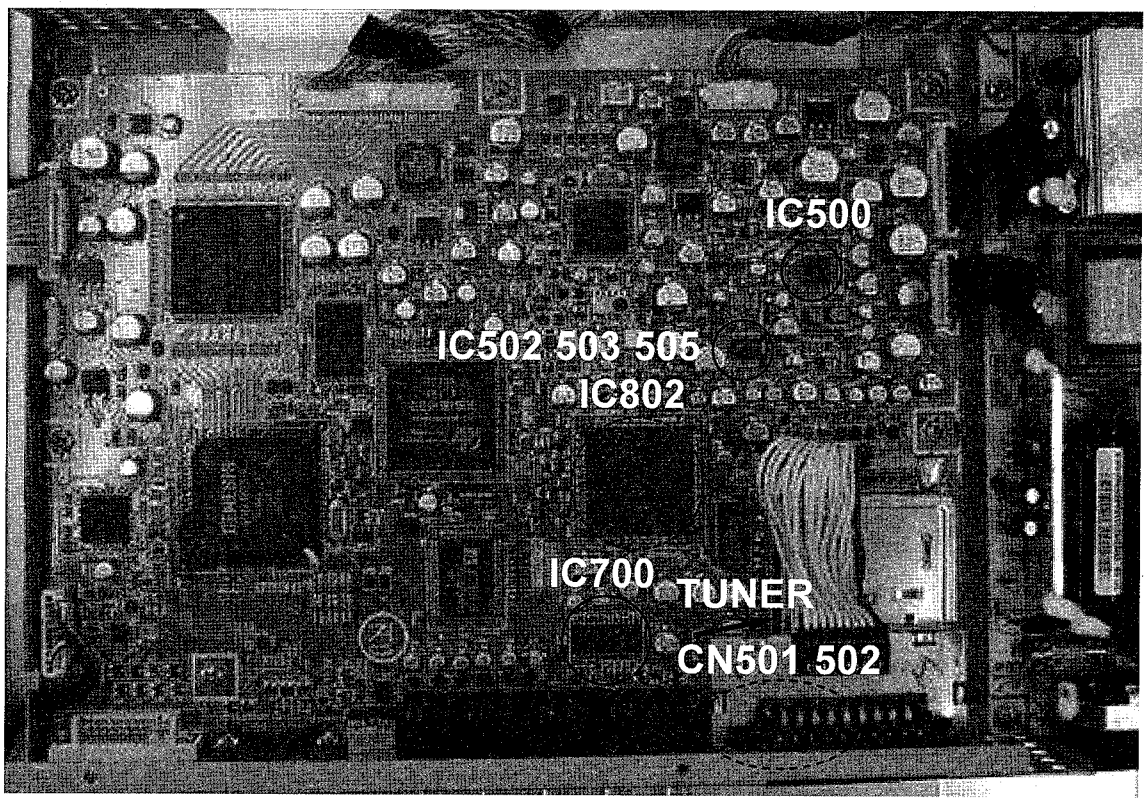


WAVEFORMS

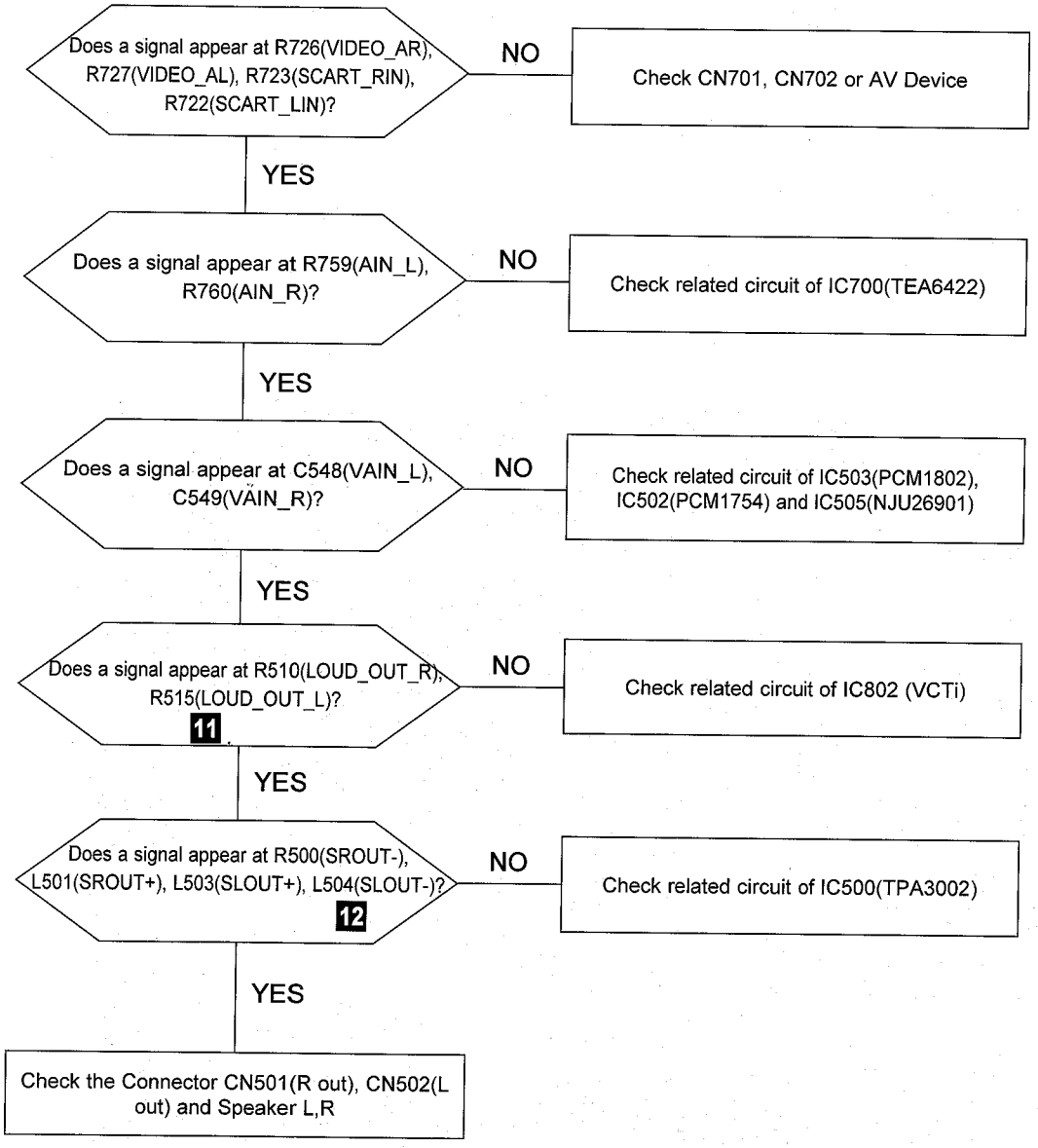

7
AUTO SETUP
UNDO ALL CHANGES
UNDO TRIG. CHANGES
UNDO HORIZ. CHANGES
UNDO VERT. CHANGES
Press RETURN to go back to previous menu
STOPPED


11
AUTO SETUP
UNDO ALL CHANGES
UNDO TRIG. CHANGES
UNDO HORIZ. CHANGES
UNDO VERT. CHANGES
Press RETURN to go back to previous menu
AUTO

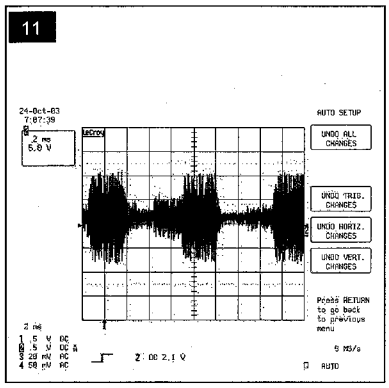

12
AUTO SETUP
UNDO ALL CHANGES
UNDO TRIG. CHANGES
UNDO HORIZ. CHANGES
UNDO VERT. CHANGES
Press RETURN to go back to previous menu
STOPPED

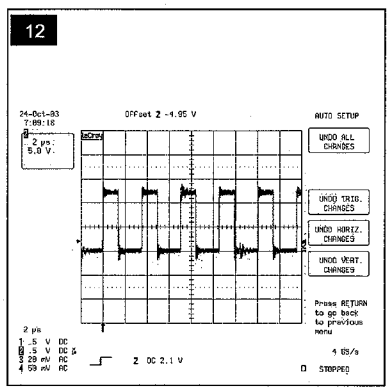

IC500
IC502 503 505
IC802
IC700
TUNER
CN501 502

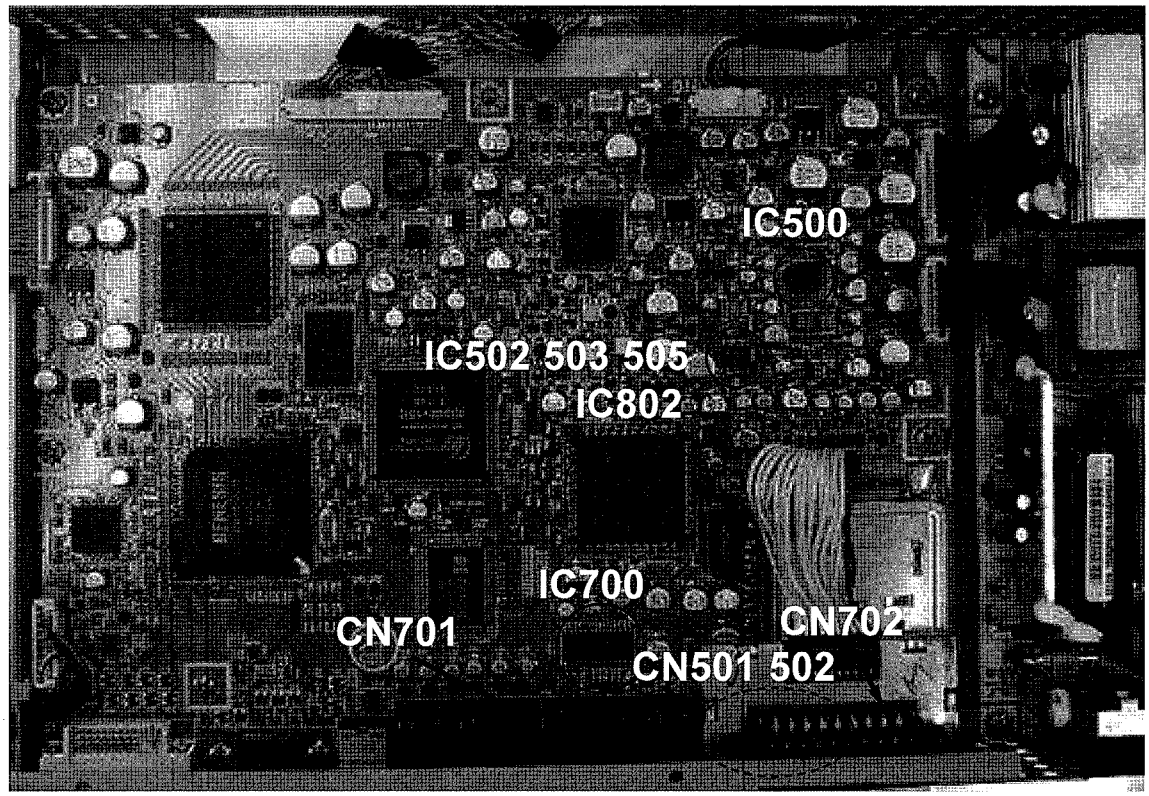
4-9 No Sound(VIDEO, S-VIDEO, SCART)


Does a signal appear at R726(VIDEO_AR), R727(VIDEO_AL), R723(SCART_RIN), R722(SCART_LIN)?
NO
Check CN701, CN702 or AV Device
YES
Does a signal appear at R759(AIN_L), R760(AIN_R)?
NO
Check related circuit of IC700(TEA6422)
YES
Does a signal appear at C548(VAIN_L), C549(VAIN_R)?
NO
Check related circuit of IC503(PCM1802), IC502(PCM1754) and IC505(NJU26901)
YES
Does a signal appear at R510(LOUD_OUT_R), R515(LOUD_OUT_L)?
11
NO
Check related circuit of IC802 (VCTi)
YES
Does a signal appear at R500(SROUT-), L501(SROUT+), L503(SLOUT+), L504(SLOUT-)?
12
NO
Check related circuit of IC500(TPA3002)
YES
Check the Connector CN501(R out), CN502(L out) and Speaker L,R

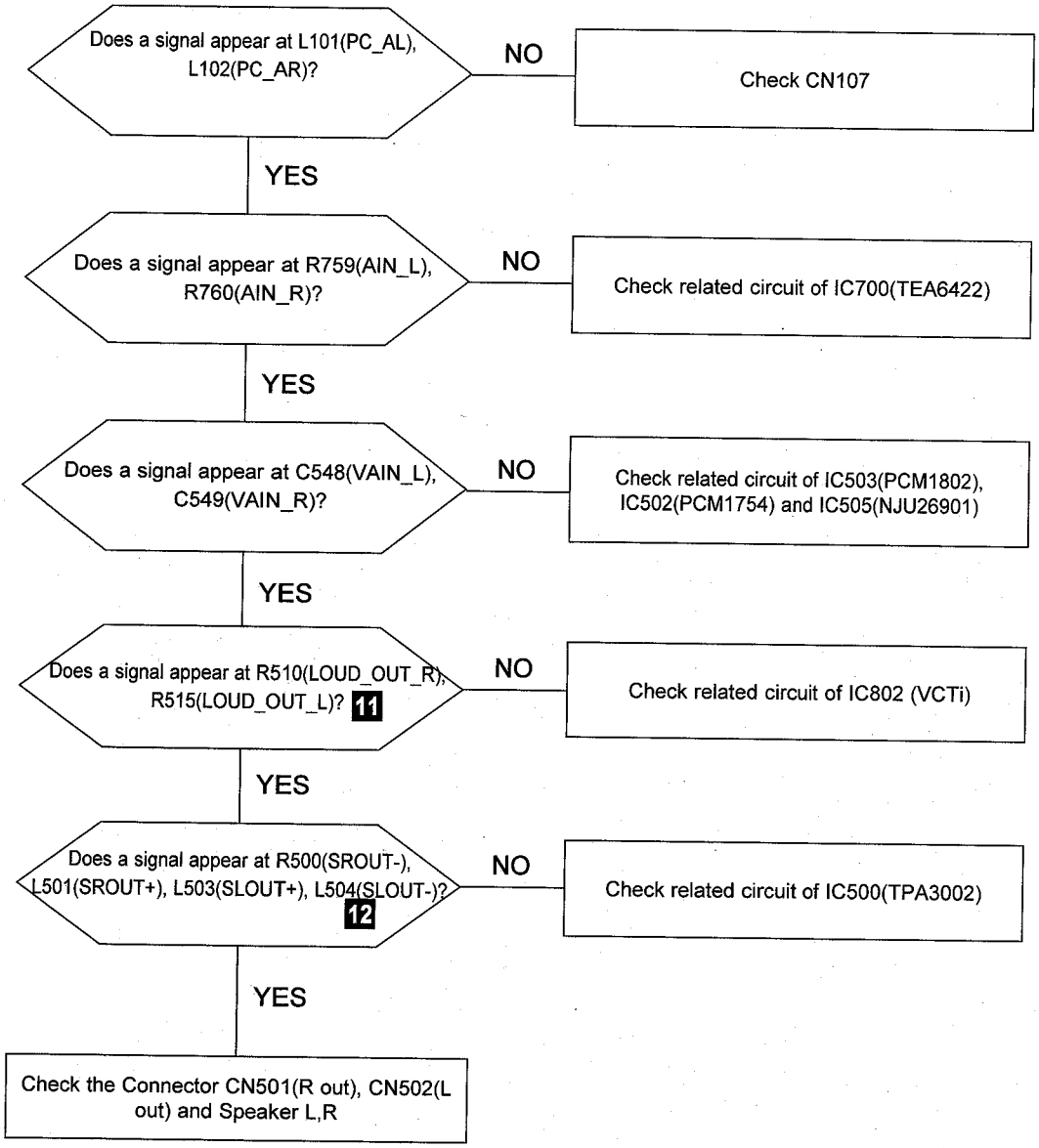
WAVEFORMS


11
AUTO SETUP
UNDO ALL CHANGES
UNDO TRIG. CHANGES
UNDO HORIZ. CHANGES
UNDO VERT. CHANGES
Press RETURN to go back to previous menu
AUTO


12
AUTO SETUP
UNDO ALL CHANGES
UNDO TRIG. CHANGES
UNDO HORIZ. CHANGES
UNDO VERT. CHANGES
Press RETURN to go back to previous menu
STOPPED

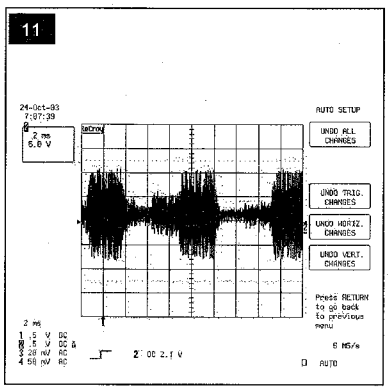

IC500
IC502 503 505
IC802
IC700
CN701
CN702
CN501 502

4-10 No Sound(PC)

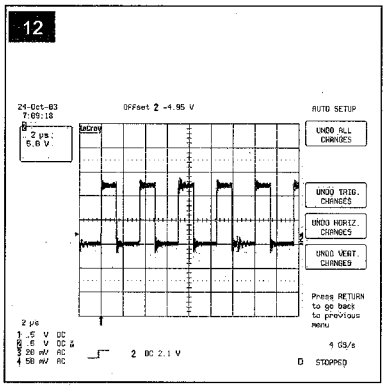

Does a signal appear at L101(PC_AL), L102(PC_AR)?
NO
Check CN107
YES
Does a signal appear at R759(AIN_L), R760(AIN_R)?
NO
Check related circuit of IC700(TEA6422)
YES
Does a signal appear at C548(VAIN_L), C549(VAIN_R)?
NO
Check related circuit of IC503(PCM1802), IC502(PCM1754) and IC505(NJU26901)
YES
Does a signal appear at R510(LOUD_OUT_R), R515(LOUD_OUT_L)? 11
NO
Check related circuit of IC802 (VCTi)
YES
Does a signal appear at R500(SROUT-), L501(SROUT+), L503(SLOUT+), L504(SLOUT-)? 12
NO
Check related circuit of IC500(TPA3002)
YES
Check the Connector CN501(R out), CN502(L out) and Speaker L,R

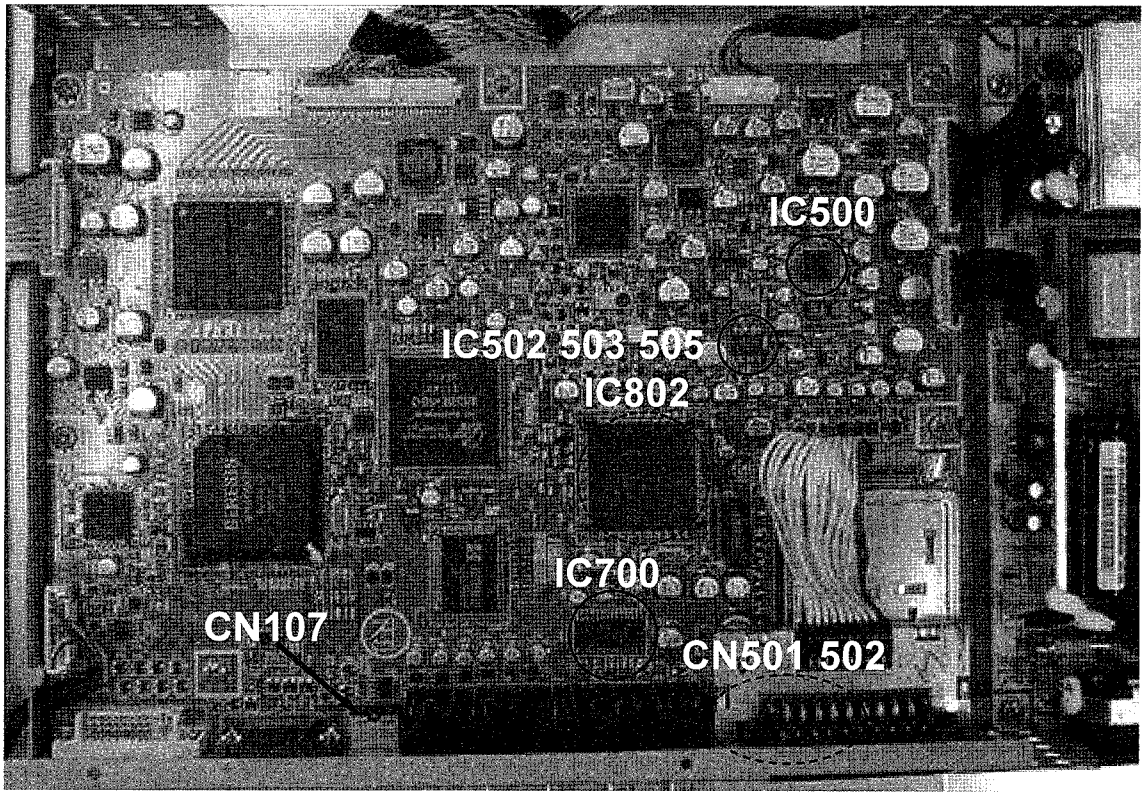
WAVEFORMS

11



12

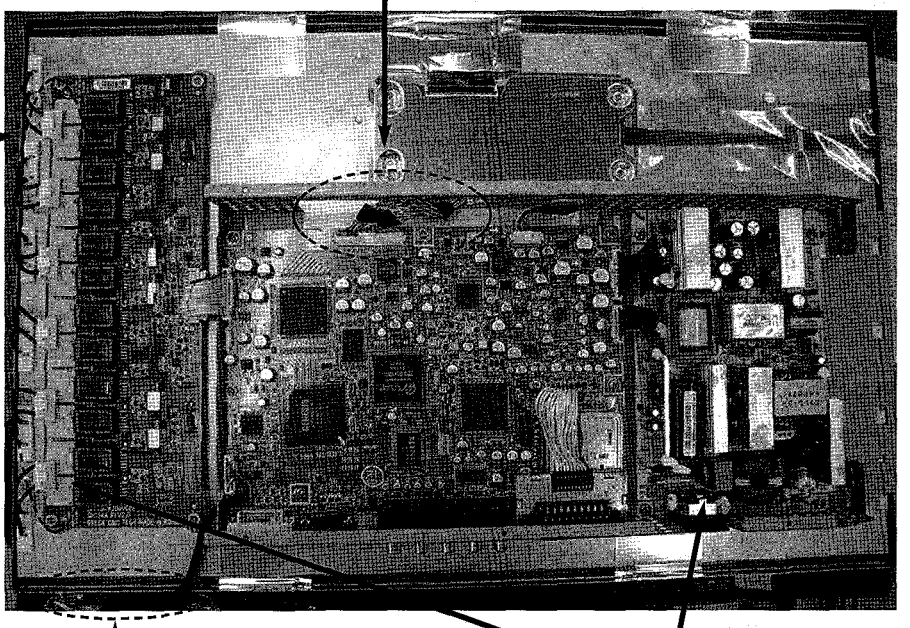




4-11 Problems & Troubleshooting (Checklist)

When display noises such as vertical lines or dots appear on the screen.

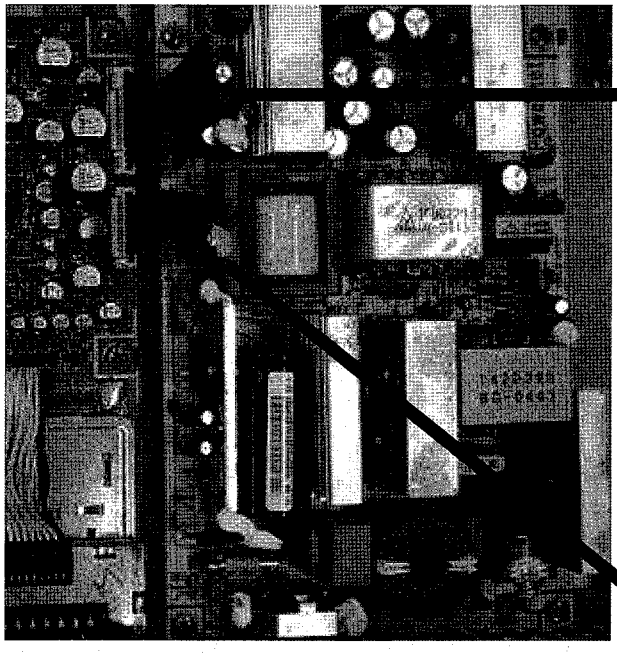
When the screen repeatedly powers on and off, this is probably due to one of the Backlight wires being disconnected.



When any of the function keys or the IR does not work.

High voltages run through the primary GND and the lamp wires on the IP board. Do not touch them under any circumstances. This will cause electrical shock.

4-12 Voltage Checkpoint (INVERTER)

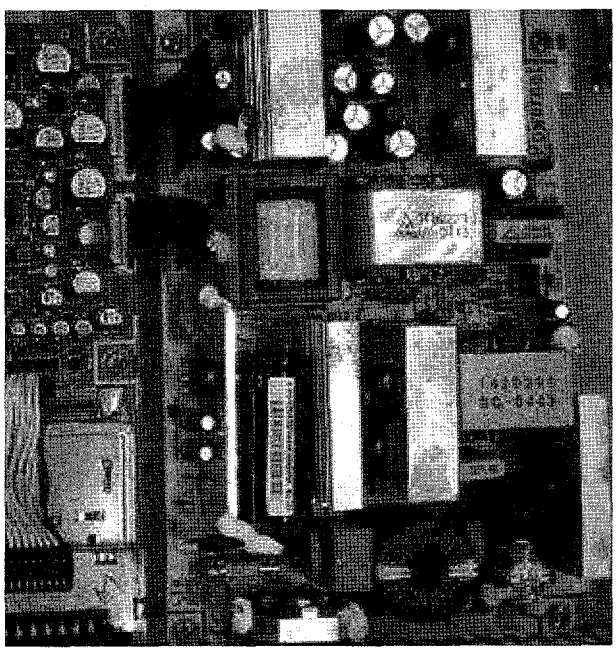


Pin	Signal
14	INVERTER 24V
13	INVERTER 24V
12	INVERTER 24V
11	INVERTER 24V
10	GND (24V)
9	GND (24V)
8	GND (24V)
7	GND (24V)
6	13V
5	GND (13V)
4	12V
3	12V
2	GND (12V)
1	GND (12V)

While the power is off, the #2 pin STD of the 10-pin connector still runs an electric current of 5V while the others are turned off and go into standby. The consumption power is satisfied in this way.

Pin	Signal
10	DC 5V
9	DC 5V
8	DC 5V
7	DC 5V
6	GND(5V)
5	GND(5V)
4	GND(5V)
3	GND(STABD-BY 5V)
2	STAND-BY 5V
1	POWER ON/OFF

4-13 Voltage Checkpoint (SMPS)



Pin	Signal
14	INVERTER 24V
13	INVERTER 24V
12	INVERTER 24V
11	INVERTER 24V
10	INVERTER 24V
9	GND (24V)
8	GND (24V)
7	GND (24V)
6	GND (24V)
5	GND (24V)
4	-
3	BACKLIGHT ENABLE
2	BACKLIGHT CONTROL
1	PWM DIMMING

When any one of the backlight lamp wires is disconnected, the screen will repeatedly power on and off, to protect the screen. First check the lamp wires.

4-14 Follow-ups for Board Replacement

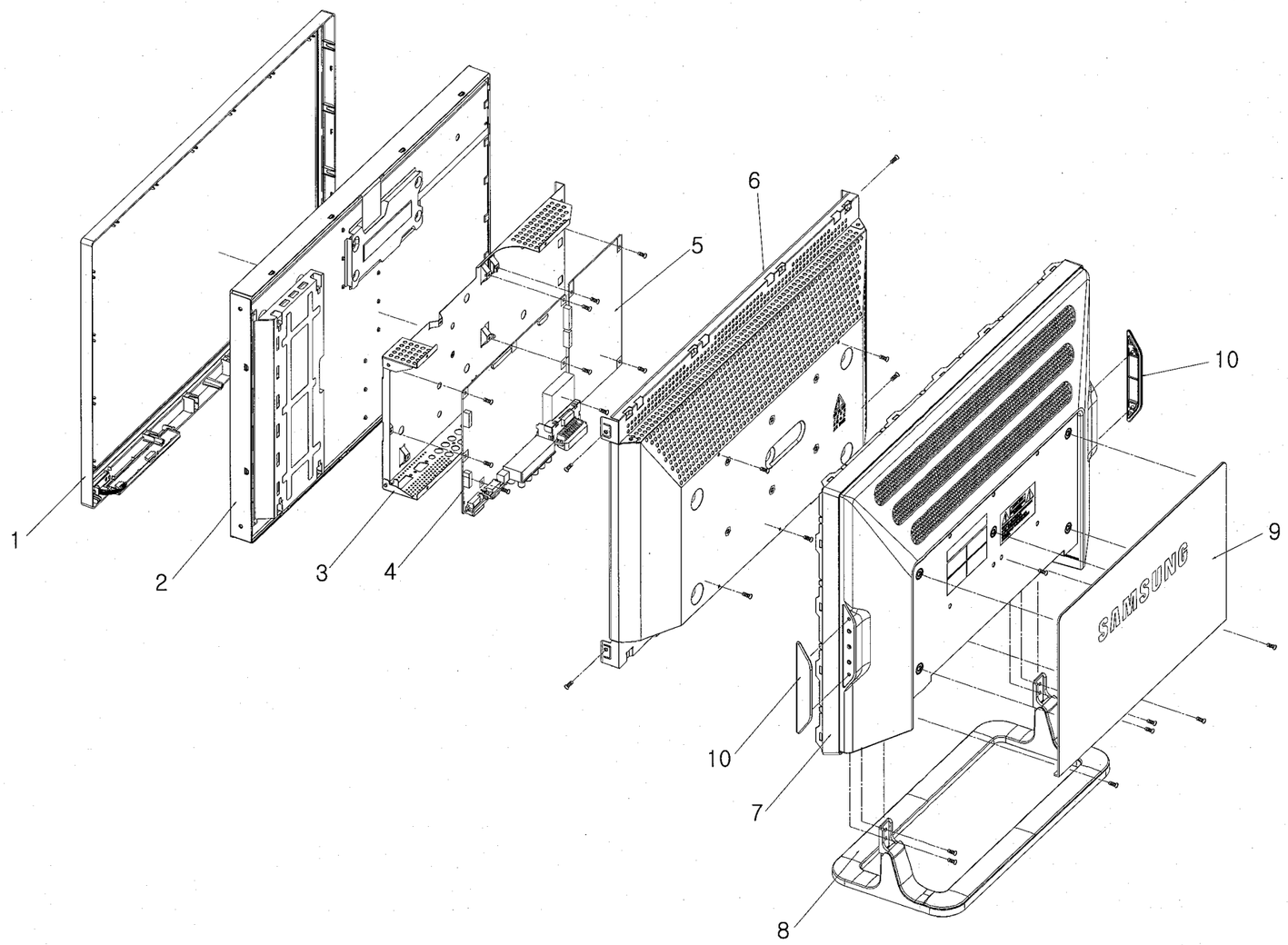
- Check if the PC colors are properly adjusted.
- DDC Input (Both analog and digital inputs required)
- Perform a hard power off after resetting in service mode.

Memo

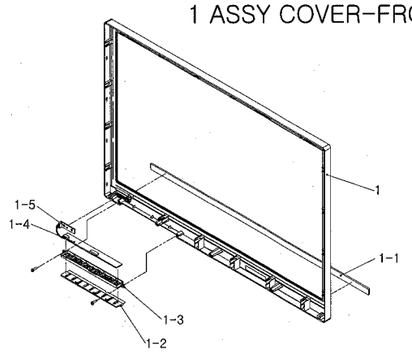
5 Exploded View & Parts List

-You can search for updated part codes through ITSELF web site.
URL : http://itself.sec.samsung.co.kr/

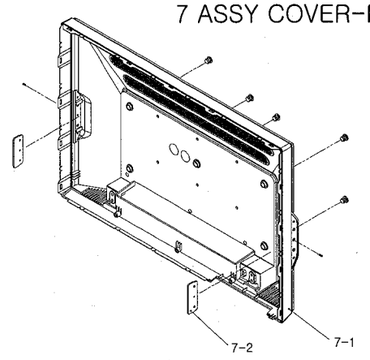
5-1 Exploded View



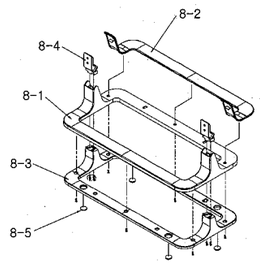
1 ASSY COVER-FRONT



7 ASSY COVER-REAR



8 ASSY-STAND



5-2 Parts List

No.	DESCRIPTION	CODE No.	SPECIFICATION	Q'ty	REMARKS
1	ASSY, COVER-FRONT	BN96-01720A	ABS HB PO24FS	1	SA
1-1	COVER-FRONT	BN63-01659A	ABS HB BK07 + SPRAY	1	SNA
1-2	COVER-DECORATION	BN63-01711A	PMMA HB CLEAR + SILK	1	SNA
1-3	COVER-KNOB CONTROL	BN63-01712A	ABS+PC B GR70 + Silver	1	SNA
1-4	KNOB-CONTROL	BN64-00350A	ABS+PC HB GR70 + Silver	1	SNA
1-5	ASSY-FUNCTION	-	FUNCTION + LED	1	SNA
2	LCD-PANEL	BN07-00195A	LTM240M1-L01,Bbit,PVA HPD	1	SA
3	ASSY SHIELD-P PCB	BN96-01981A	SCEE TO.8	1	SNA
4	ASSY PCB MAIN	BN94-00642M	PO24FS	1	SA
5	ASSY PCB-POWER	BN96-01849A	PO24FS	1	SA
6	ASSY SHIELD-P COVER	BN96-01980A	SECC TO.8	1	SNA
7	ASSY COVER-REAR	BN96-01721A	ABS HB PO24FS	1	SA
7-1	COVER-REAR	BN63-01660A	ABS HB GR70 + SPRAY	1	SNA
7-2	BRACKET-SPEAKER	BN61-01559A	SECC T2.0	2	SNA
7-3	RUBBER-CAP,SET	BN73-00089A	ELASTOMER	5	SNA
8	ASSY STAND P-SET	BN96-01722A	ABS HB PO24FS	1	SA
8-1	COVER-STD-BASE	BN63-01662A	ABS HB GR70 (NONE,1.5)	1	SNA
8-2	COVER-STD-REAR	BN63-01663A	ABS HB BK07 (NONE, 1.5)	1	SNA
8-3	STAND-BOTTOM	BN63-01668A	ZnDC2	1	SNA
8-4	ASSY-HINGE	BN96-01692A	ZnDC2	2	SNA
8-5	RUBBER-FOOT	BN73-00077A	BUMPON, ¢ 13.5,T2.0,60~70	4	SNA
9	SCREW-MACHINE	6003-001003	BH,+,B,M4,L12,ZPC(BLK),SWRCH18	4	SA
10	COVER-REAR,SUB	BN96-01661A	ABS HB BK07 + DG-810P	1	SA

6 Block Diagram

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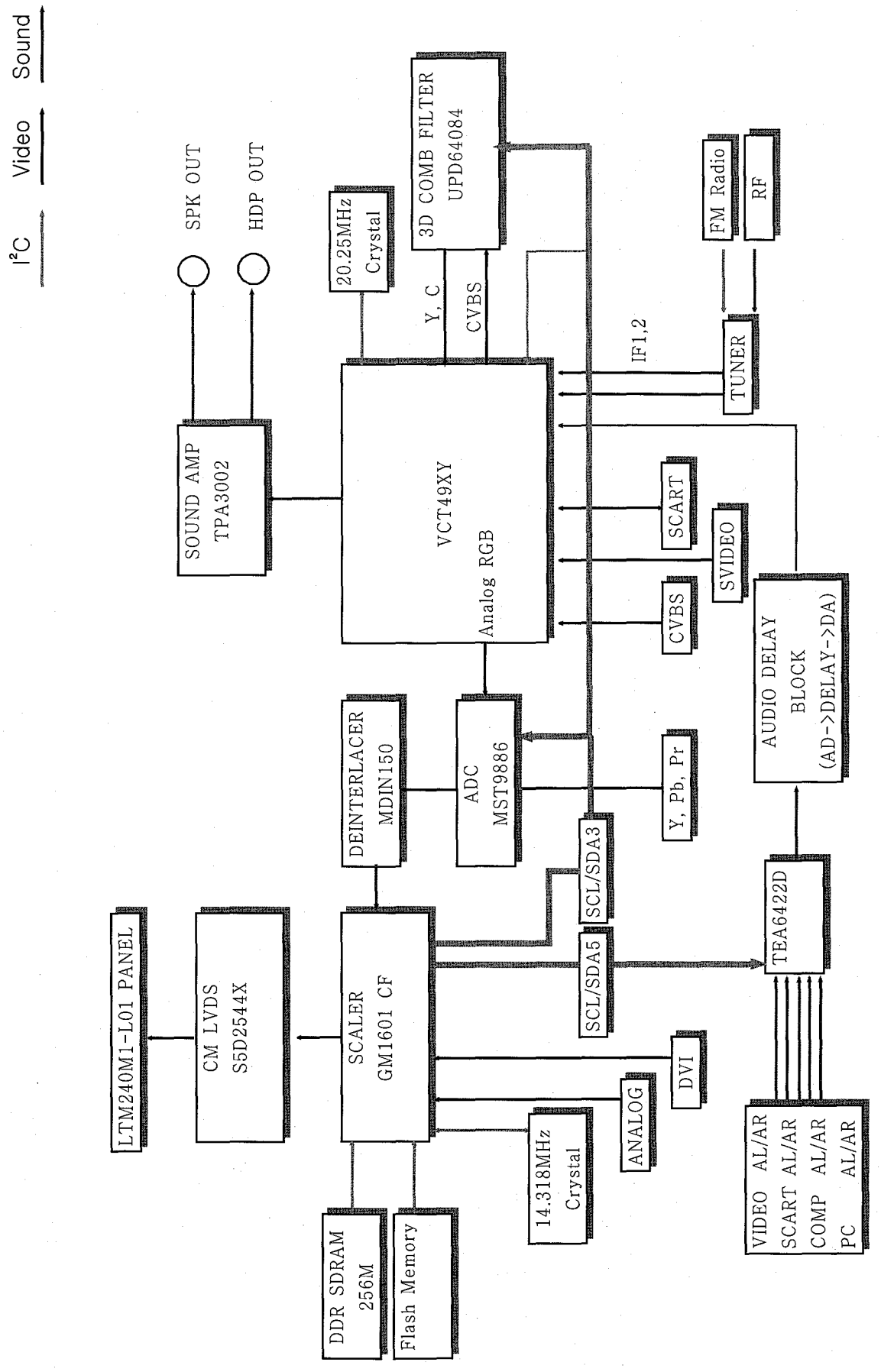
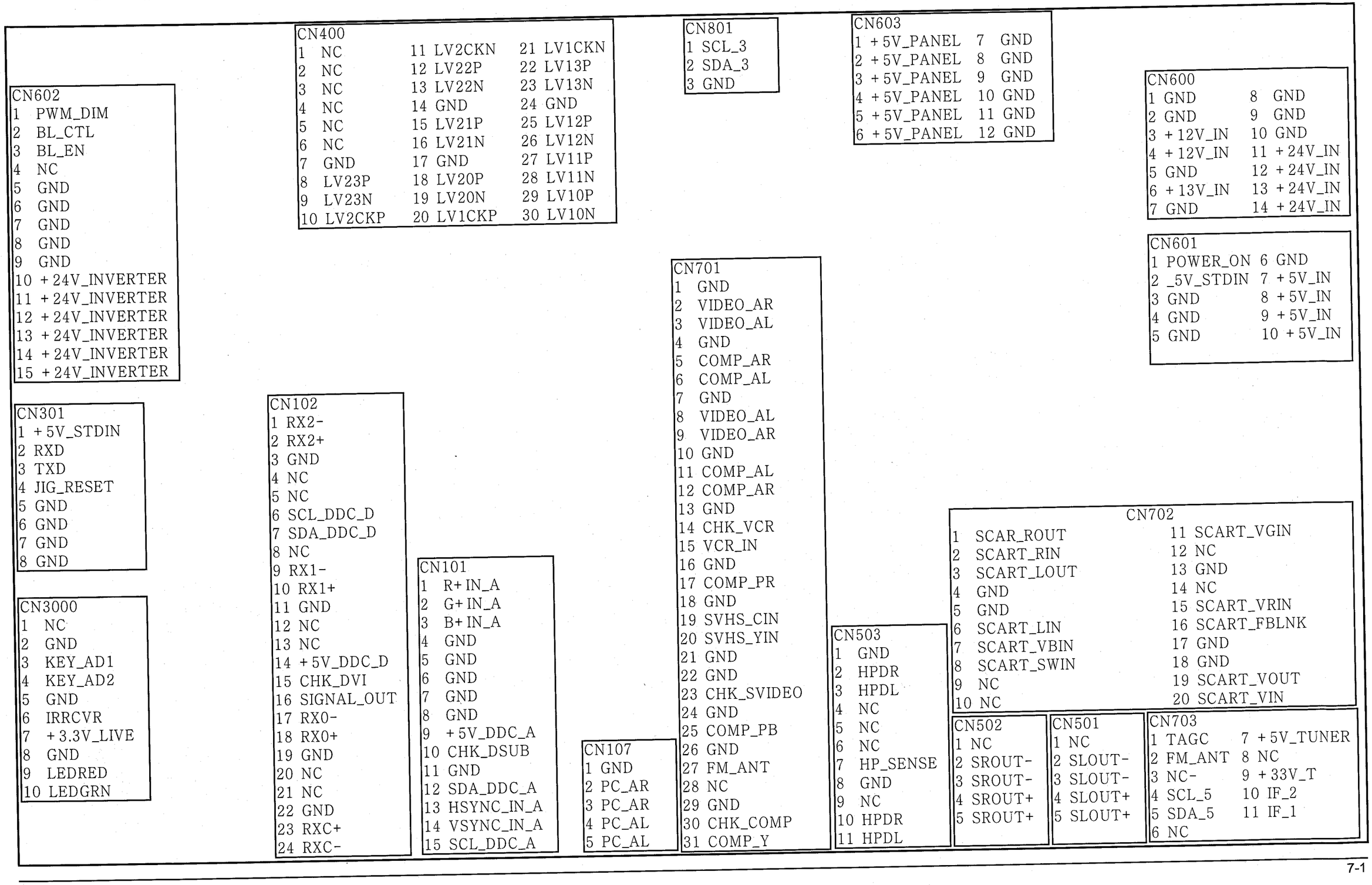


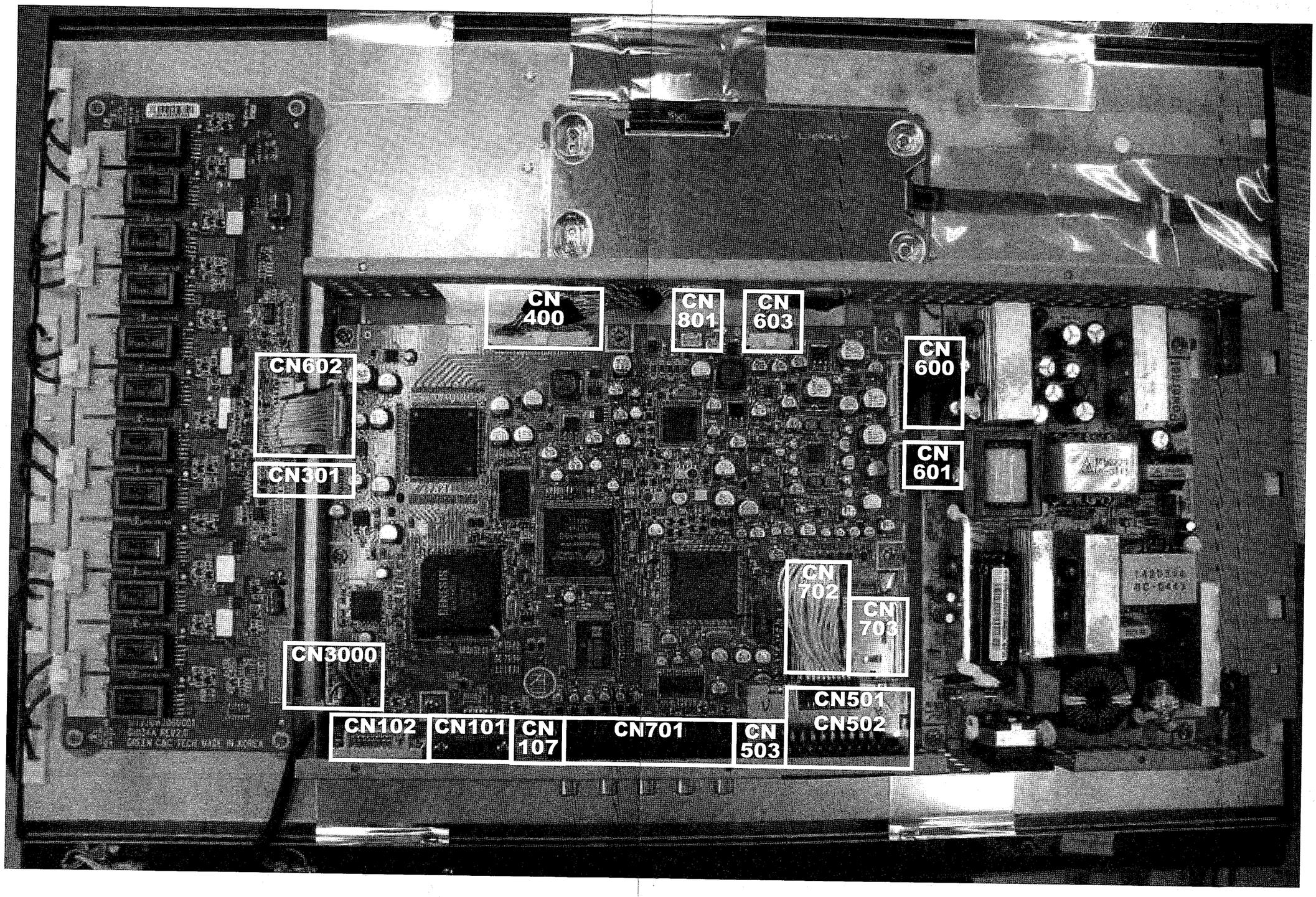
Memo

7 Wiring Diagram

7-1 Wiring Diagram



7-2 Connector connection condition



8 Schematic Diagrams

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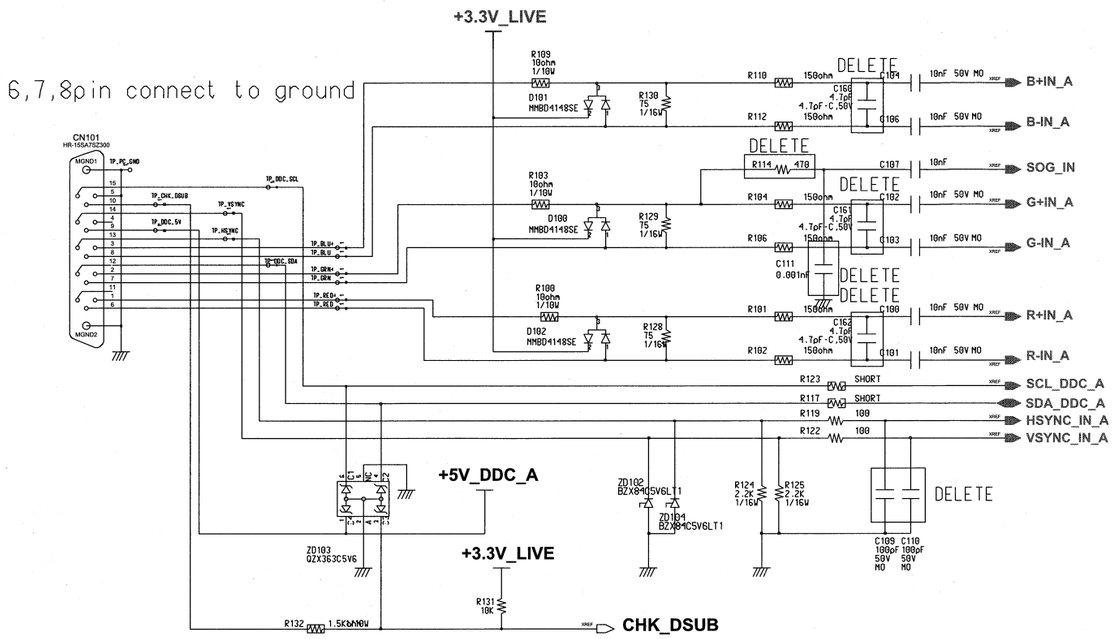
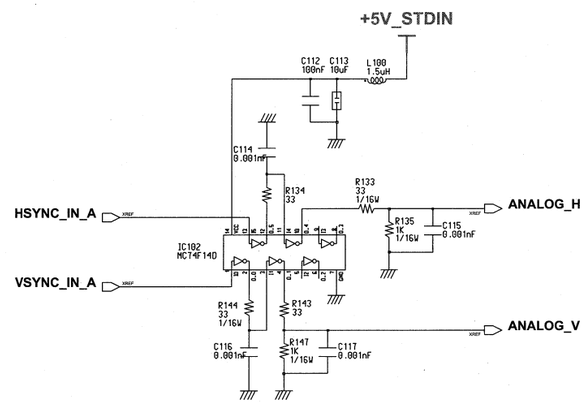
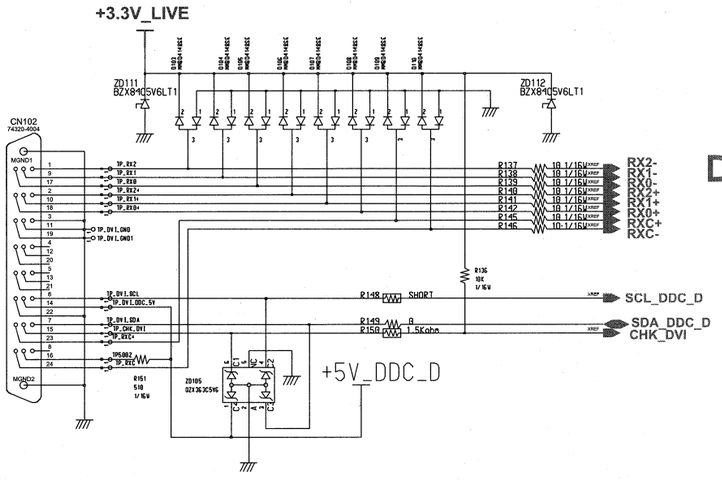
8-1 3D PC INPUT Part Schematic Diagram

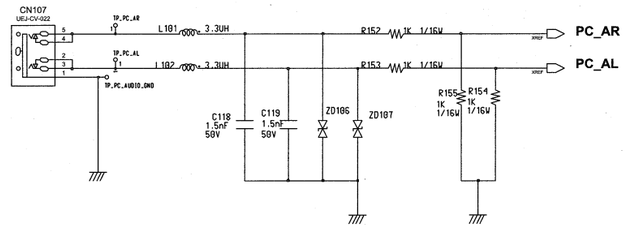


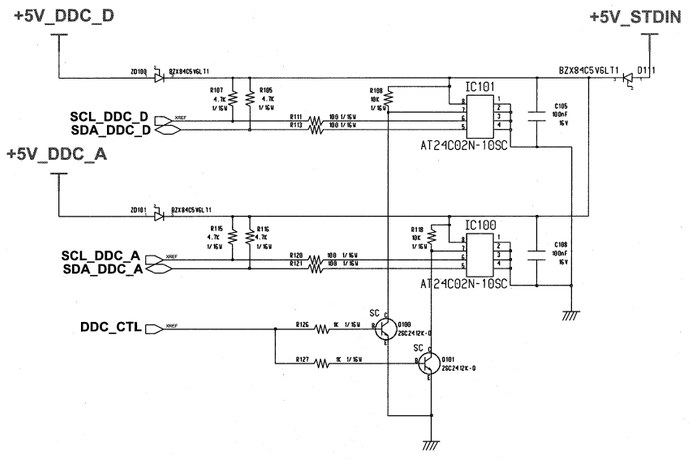
PC Input





DVI Input





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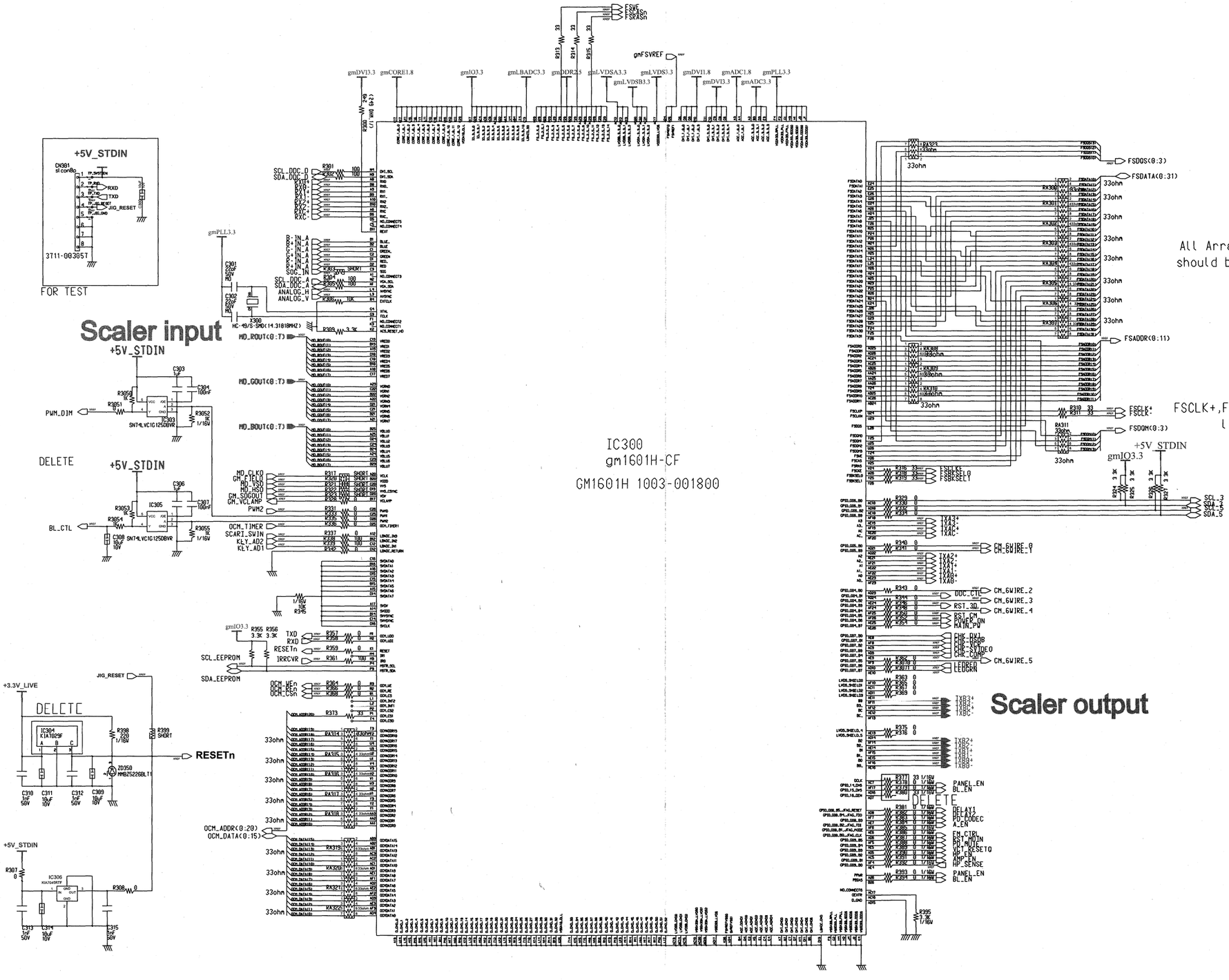
8-2 SCALER Part Schematic Diagram



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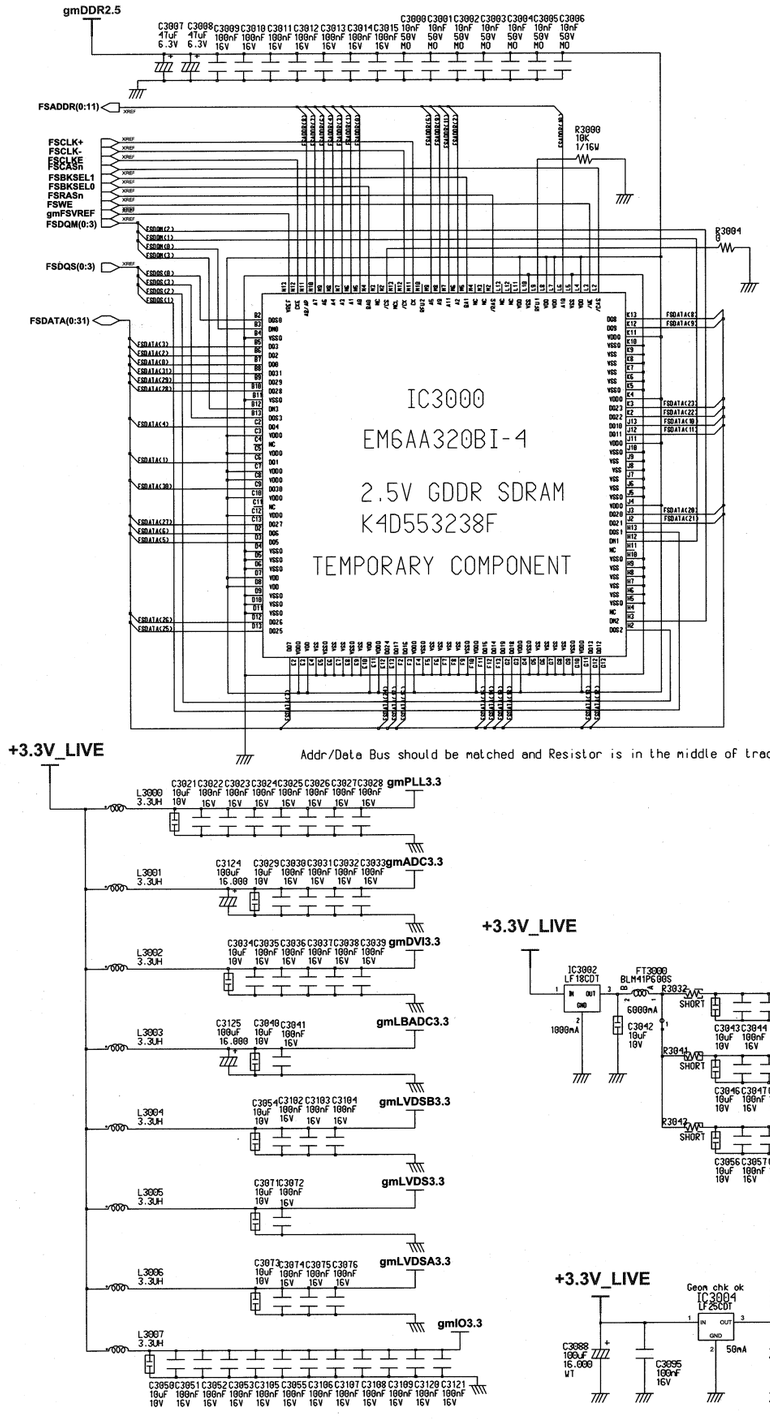
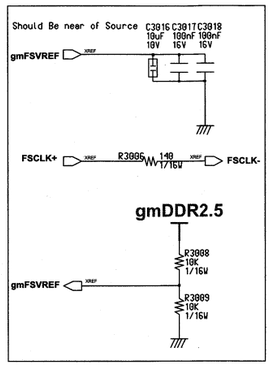
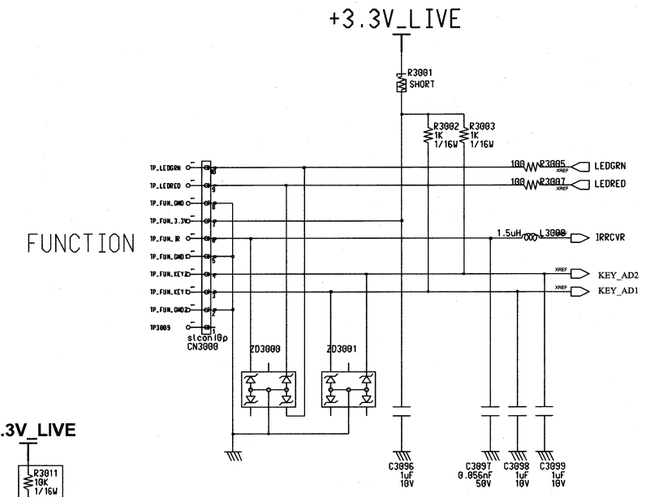
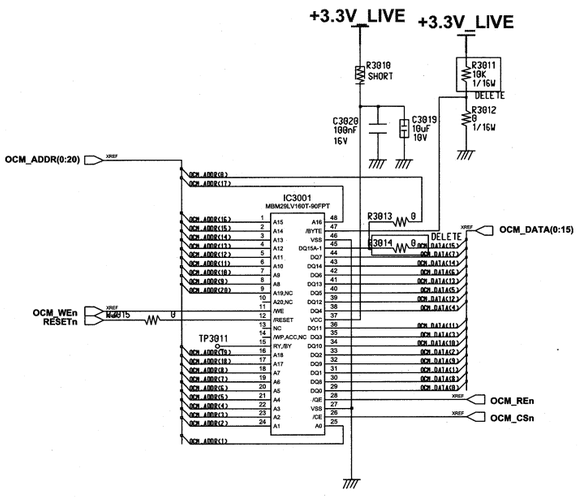
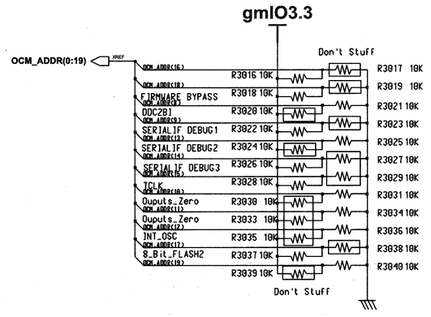
8-3 MCU & FUNCTION Part Schematic Diagram

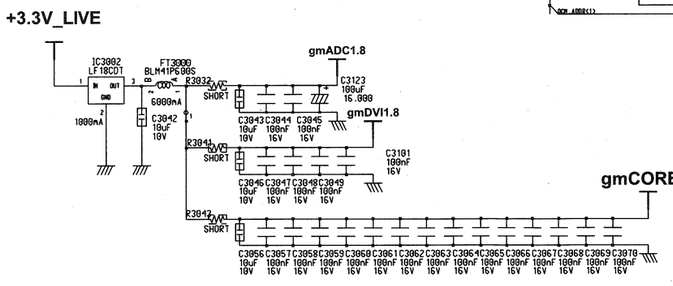


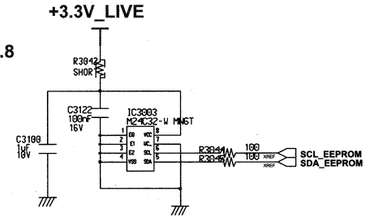


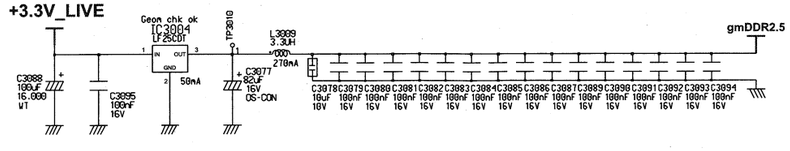












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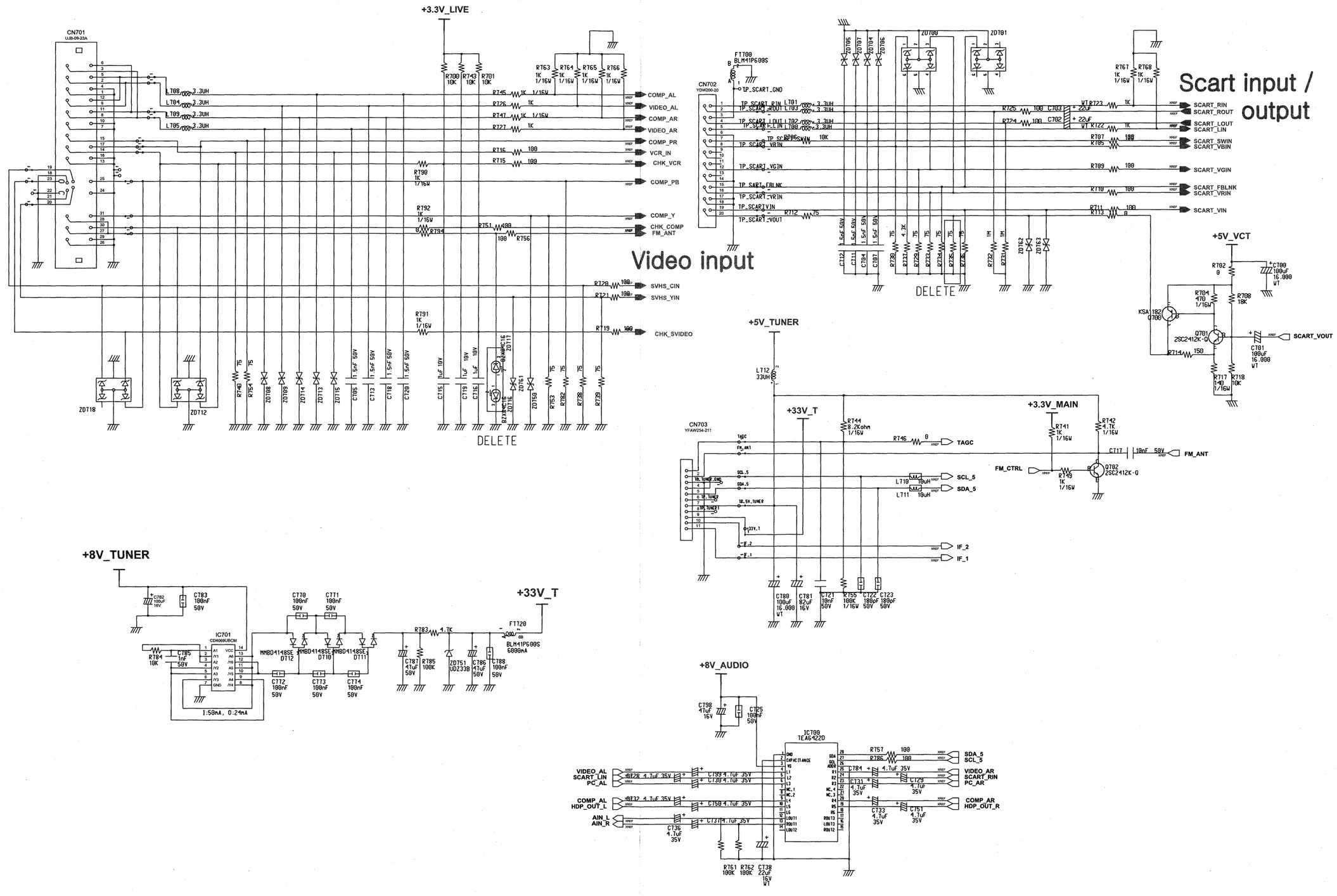
8-4 VIDEO INPUT 2 Part Schematic Diagram



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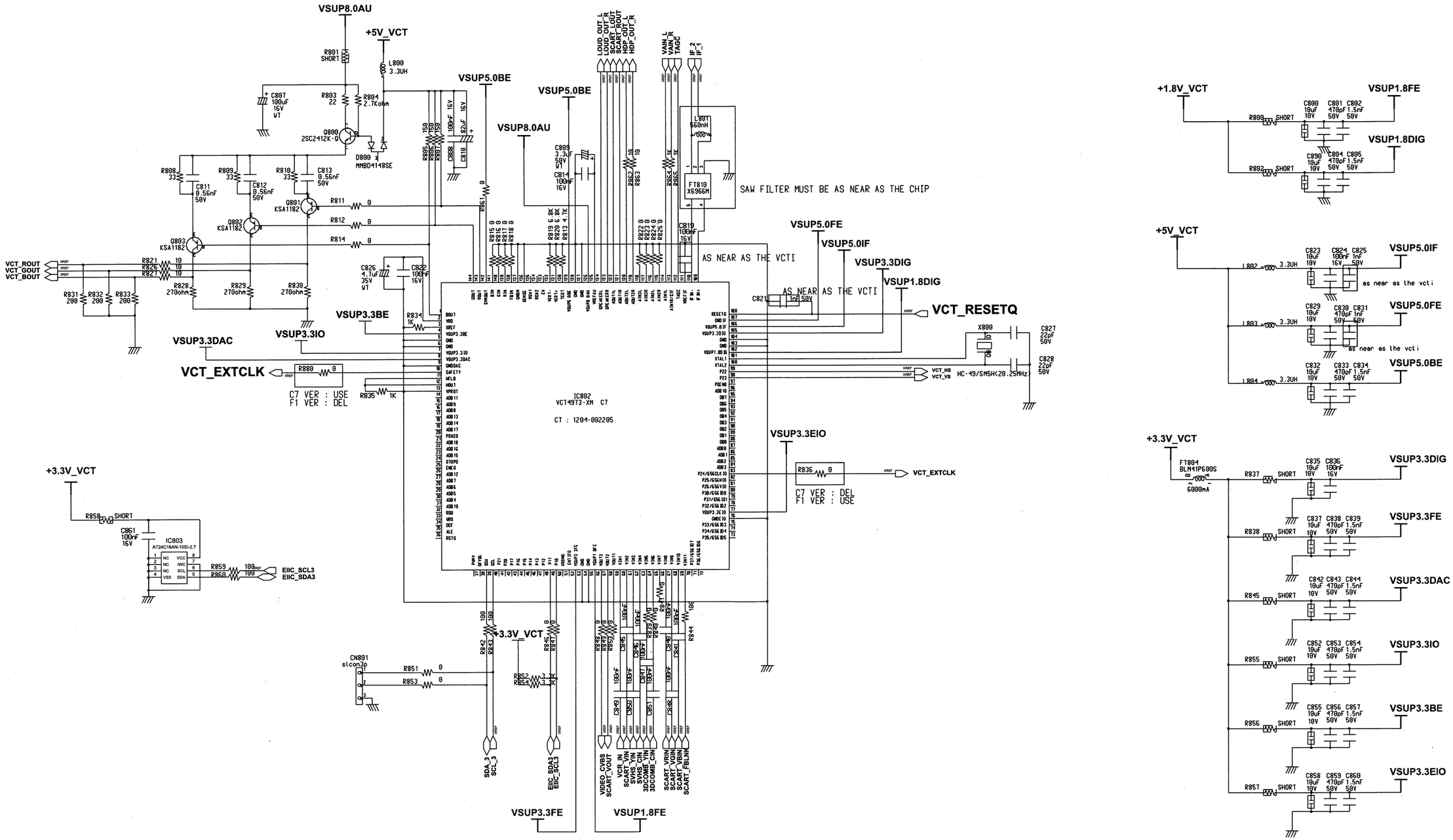
8-5 VIDEO Part Schematic Diagram



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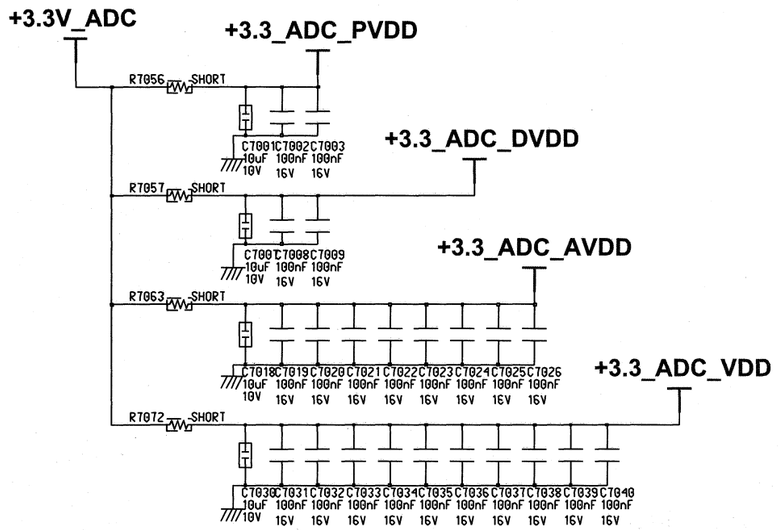
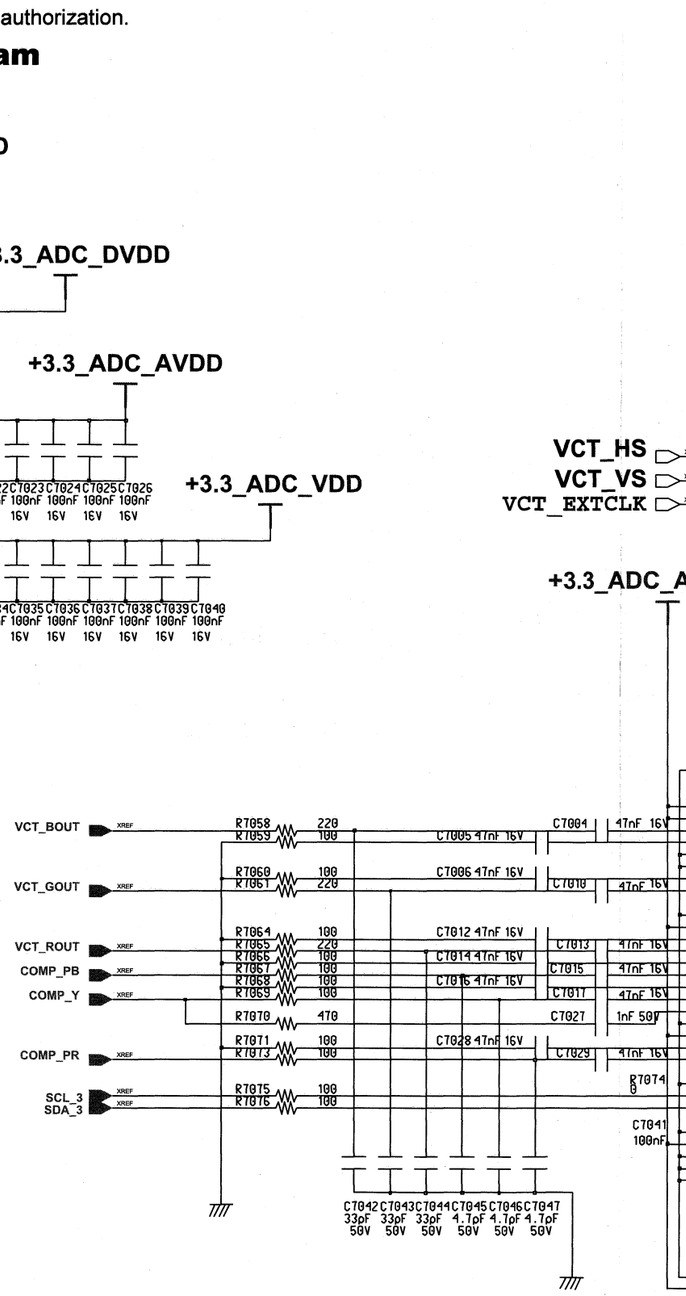
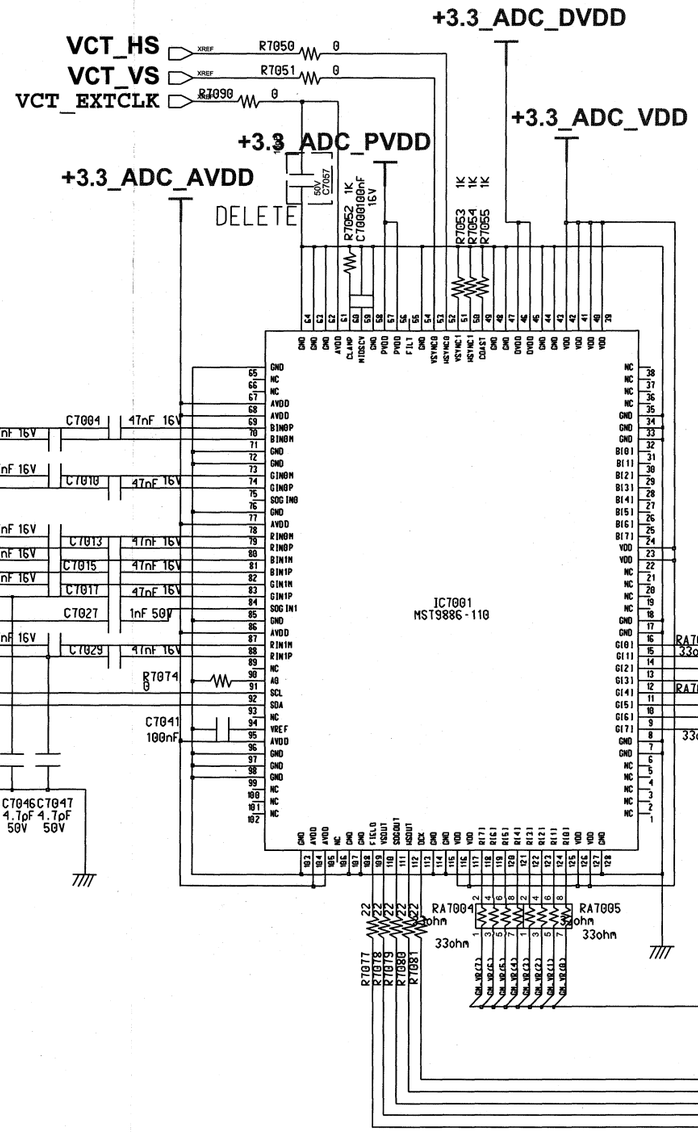
8-6 ADC Part Schematic Diagram

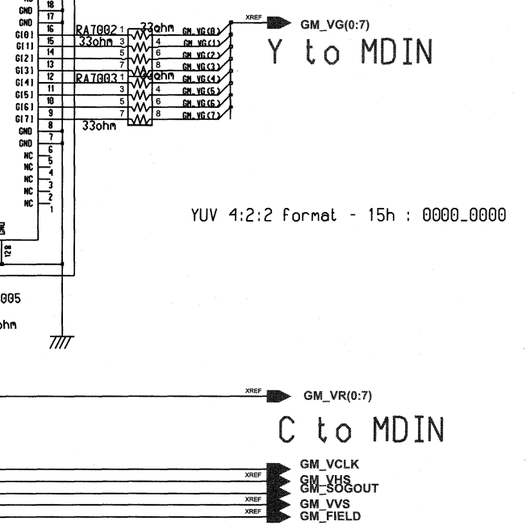


ADC input





ADC output



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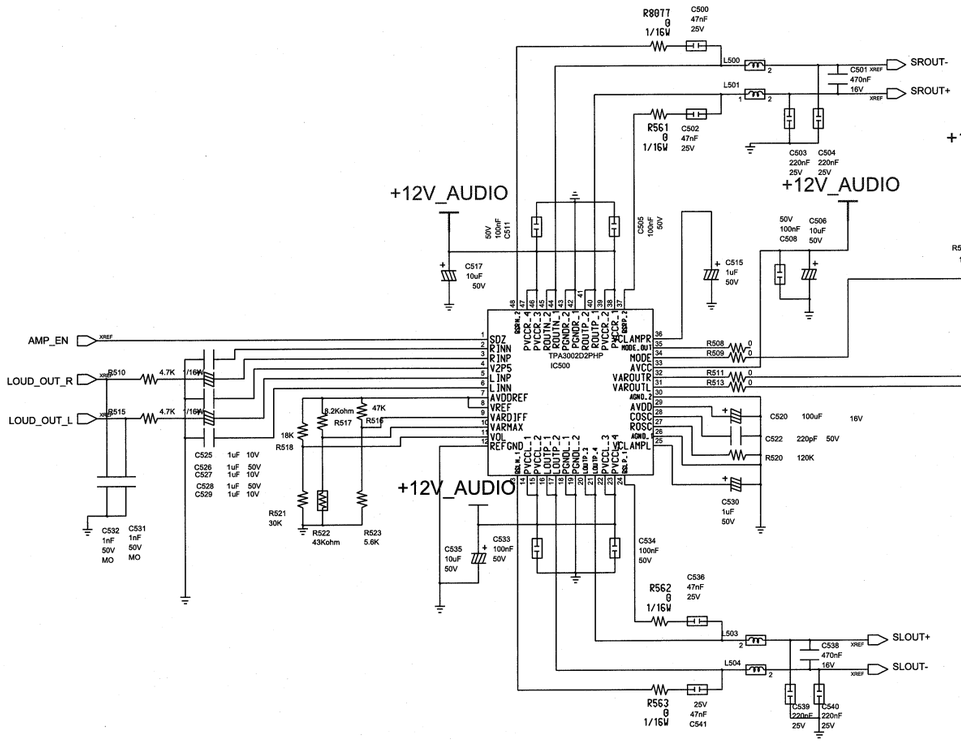
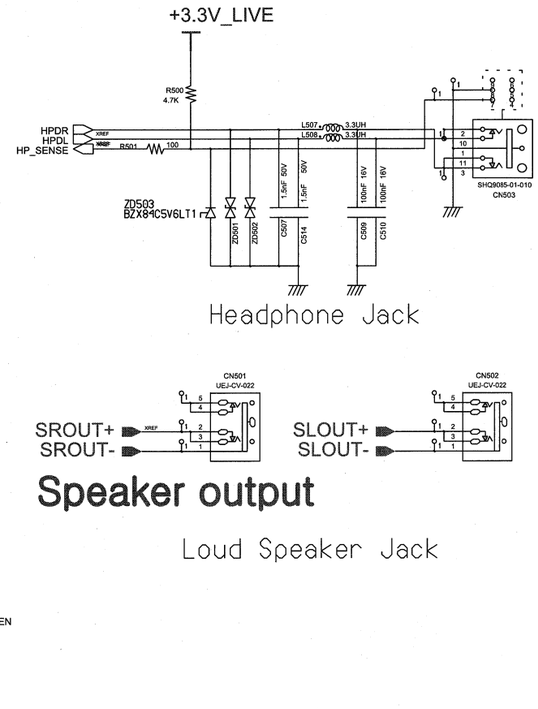
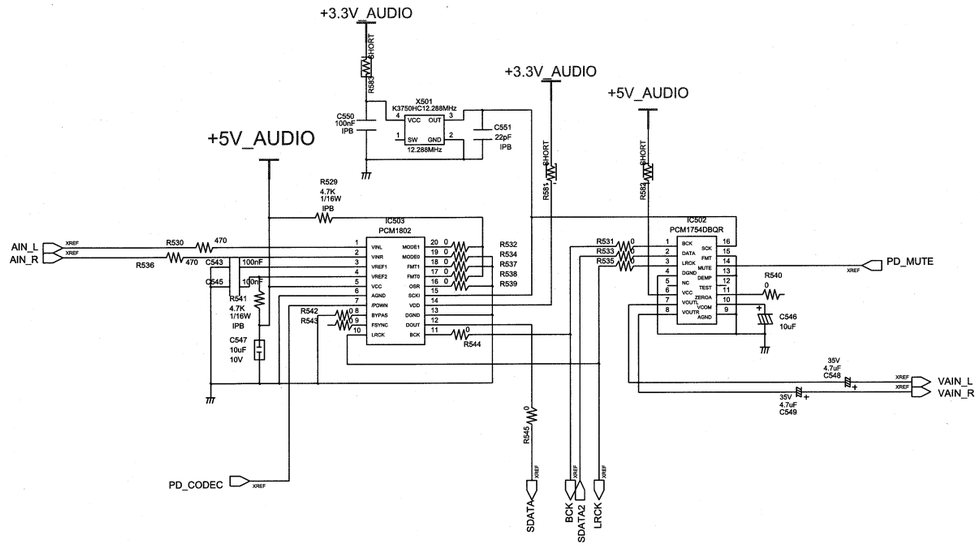
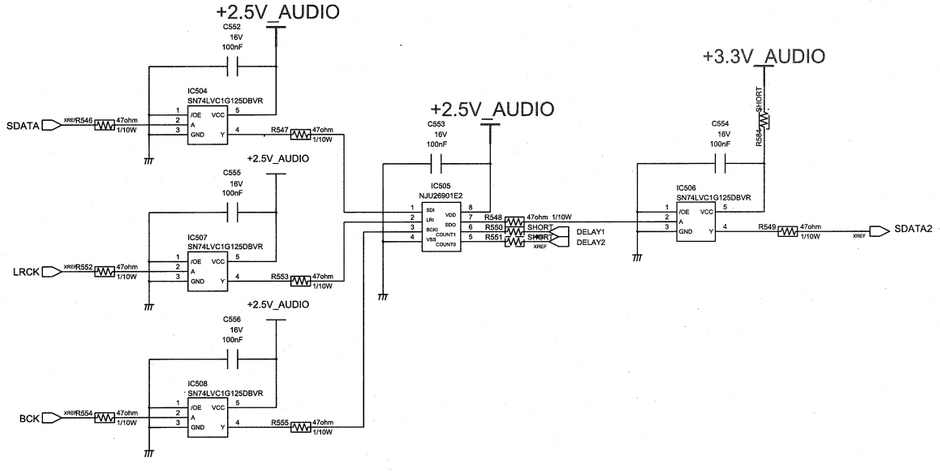
8-7 AUDIO & LIPSYNC Part Schematic Diagram









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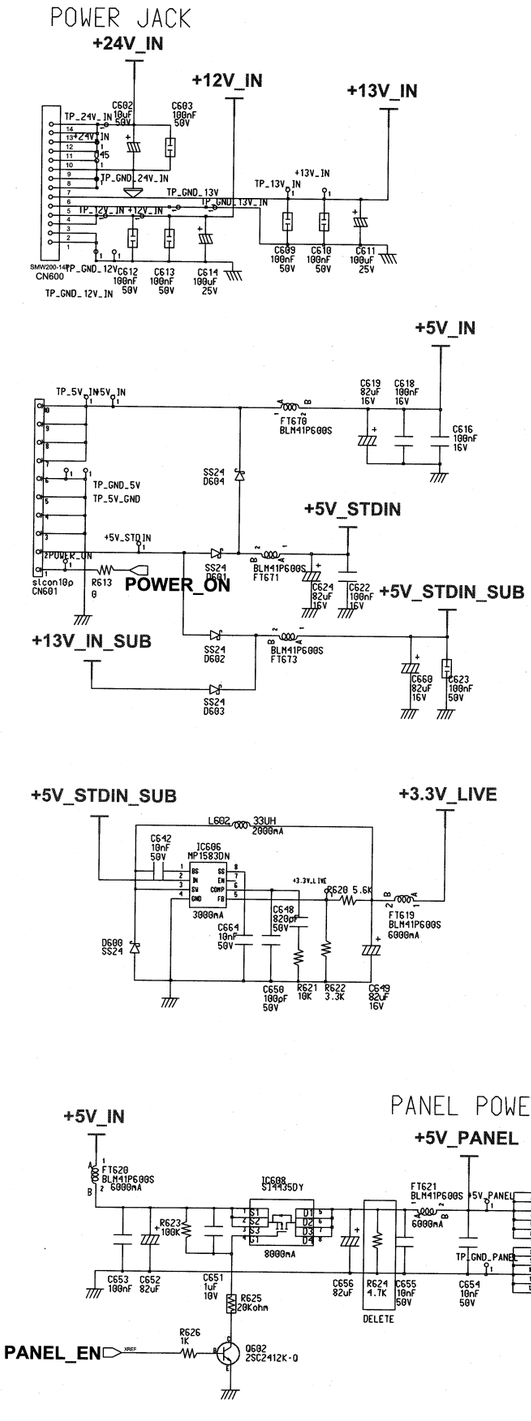
8-8 POWER & INVERTER Part Schematic Diagram



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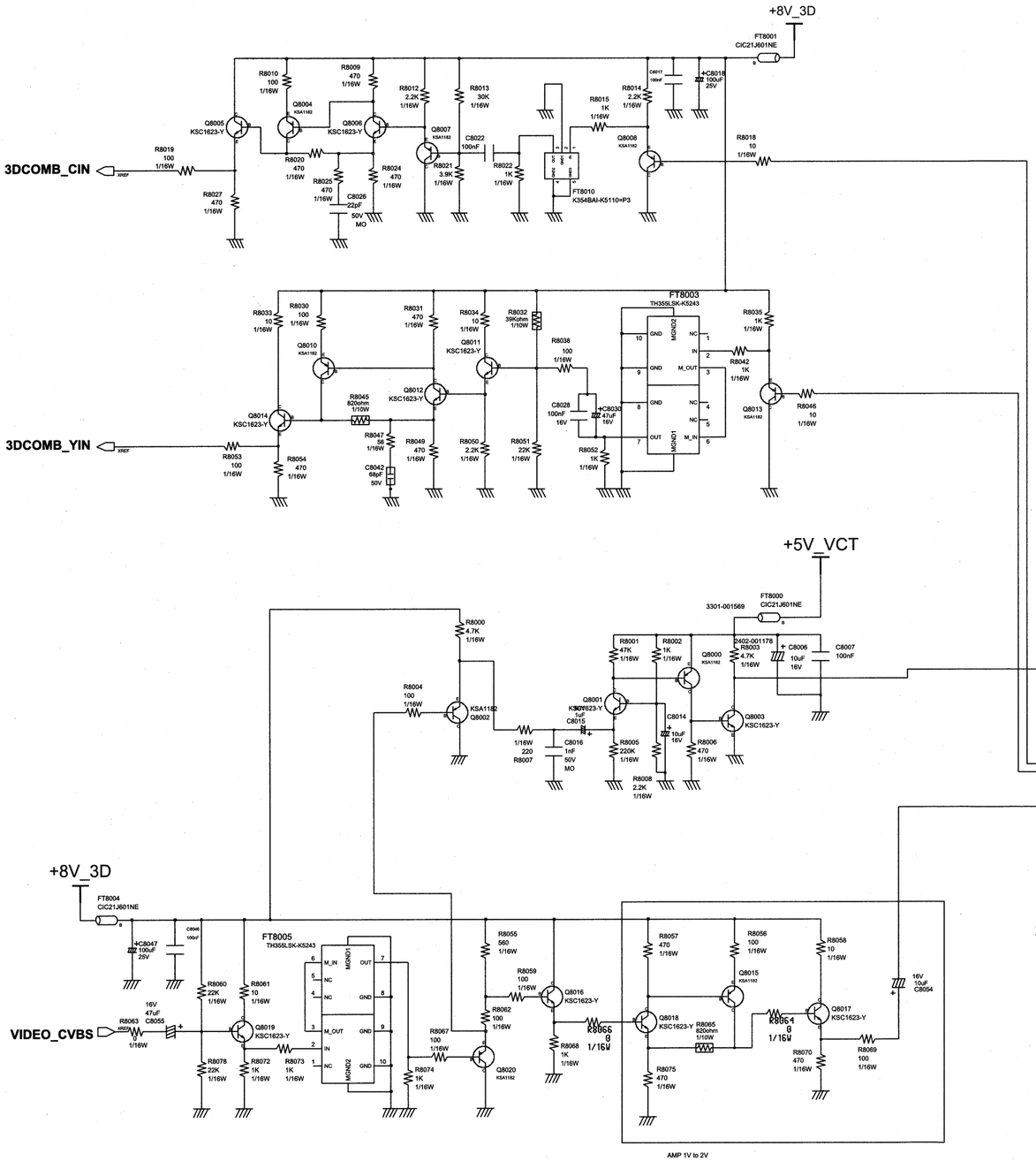
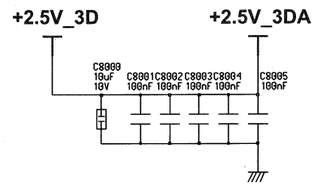
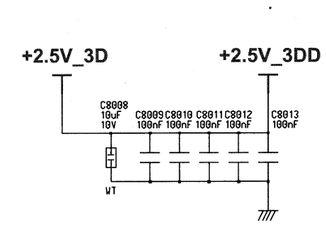
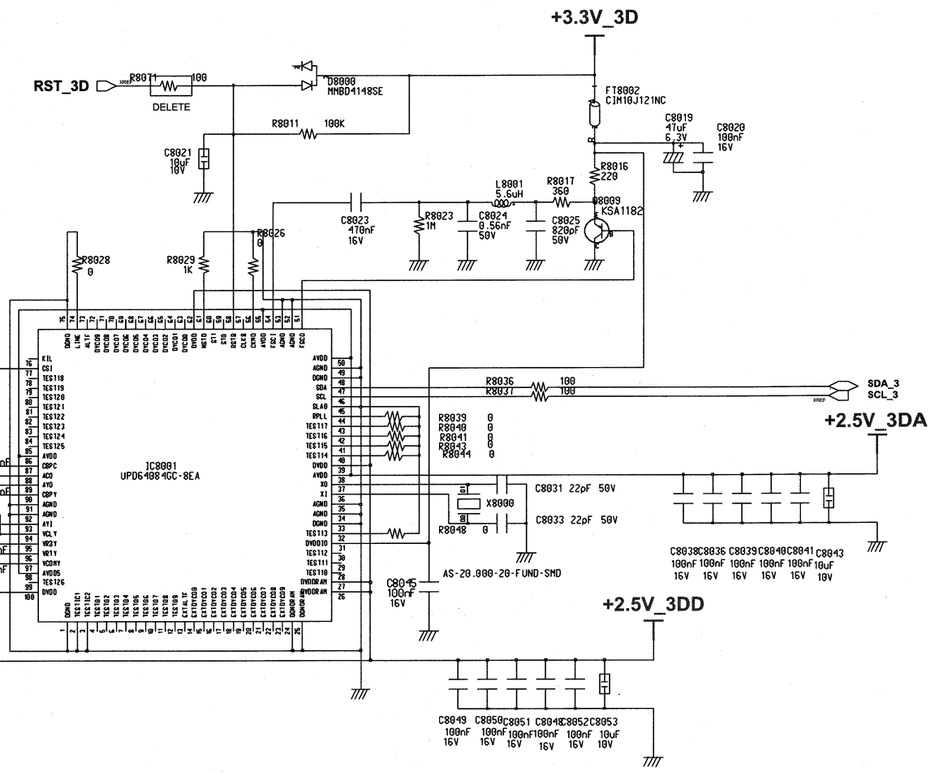
8-9 3D COMB FILTER Part Schematic Diagram









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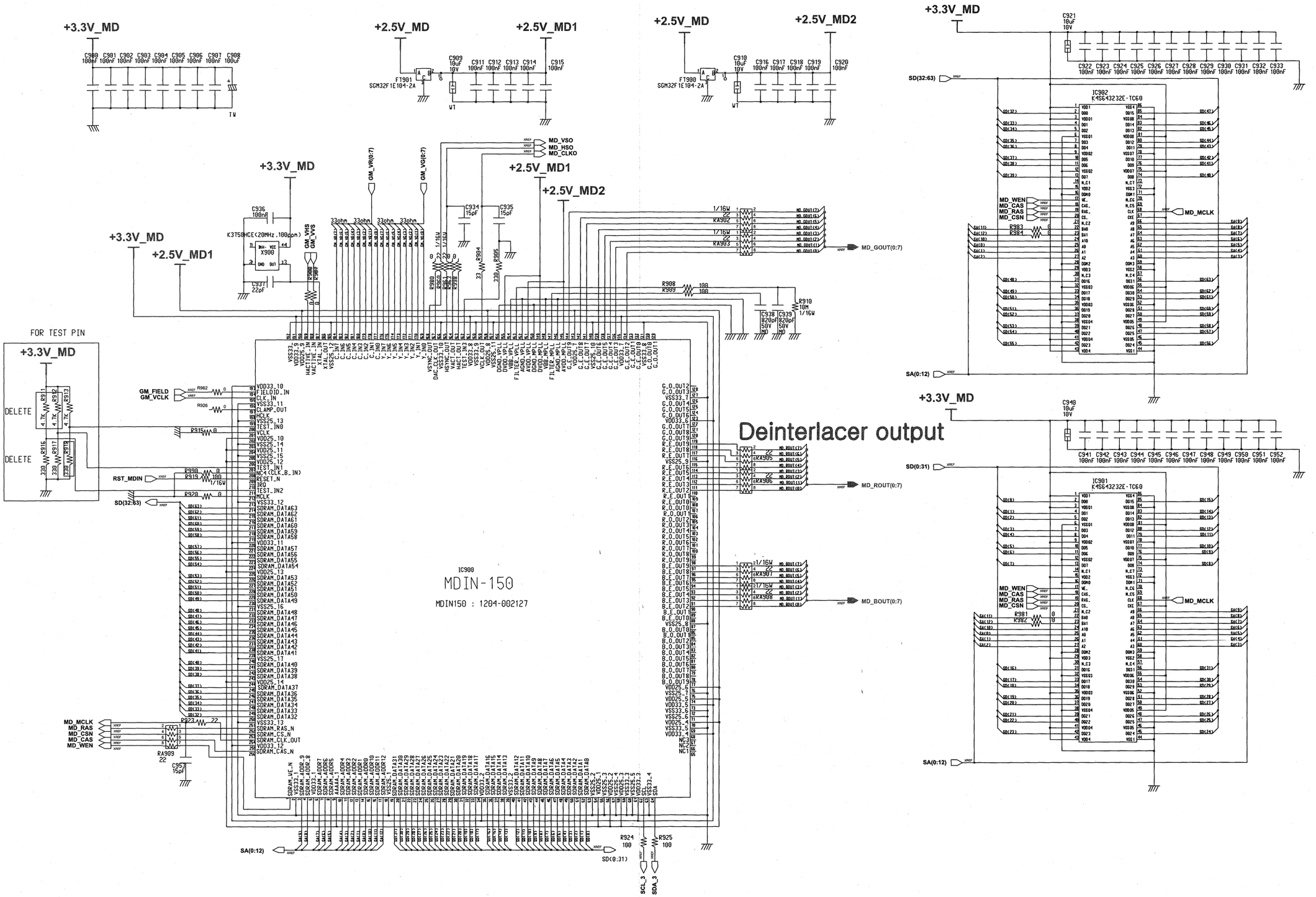
8-10 DEINTERLACER MDIN150 Part Schematic Diagram



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8-11 CM_LVDS 2 Part Schematic Diagram